

County of Loudoun  
Office of Transportation Services  
**MEMORANDUM**

**RECEIVED**

JUL 13 2010

LOUDOUN COUNTY  
DEPARTMENT OF PLANNING

**DATE:** July 13, 2010

**TO:** Marchant Schneider, Project Manager  
Department of Planning

**FROM:** George Phillips, Senior Transportation Planner *LM FOR HP*  
Lou Mosurak, Senior Coordinator *LM*

**SUBJECT:** ZMAP 2010-0001 & SPEX 2010-0003  
Dulles South High School (HS-7) and Elementary School  
First Referral

**Background**

These applications seek a Zoning Map Amendment (ZMAP) to rezone three acres of land from PD-GI to TR1-UBF and a Special Exception (SPEX) to allow a high school (1,800 student capacity) and a future elementary school (875 student capacity) on approximately 97.16 acres in the TR1-UBF zoning district (this total includes the three acres to be rezoned). A Commission Permit (CMPT 2009-0013) for these proposed schools was approved by the Planning Commission in December 2009 and ratified by the Board of Supervisors in January 2010. The site is an assemblage of several parcels is located on both sides of Goshen Road (Route 616), west of future Northstar Boulevard (Route 659 Relocated), south of Tall Cedars Parkway and north of Braddock Road (Route 620). Access to each school is proposed via two new public roads extending west from Northstar Boulevard. A vicinity map and concept plan are provided as *Attachment 1*. Existing Goshen Road (Route 616) is proposed to be abandoned from the northern site access road south to Braddock Road in order to facilitate development of the site.

In its consideration of these applications, the Office of Transportation Services (OTS) reviewed materials received from the Department of Planning on March 19, 2010, including (1) a statement of justification prepared by the Applicant, dated March 18, 2010; (2) a plan set prepared by Bowman Consulting, dated March 8, 2010; and (3) a traffic study prepared by Gorove/Slade Associates, Inc., dated March 8, 2010. OTS also reviewed revised versions of the above materials received from the Department of Planning on June 10, 2010. In particular, the Applicant provided a revised version of the traffic study, dated June 9, 2010, which (4) a revised version of the traffic study, dated June 9, 2010, which incorporated the School Board's May 2010 adopted attendance zones/catchment areas for the proposed high school. This referral reviews only this adopted service plan scenario.

**Existing, Planned and Programmed Transportation Facilities**

According to the *Revised General Plan*, the site is located within the Transition Policy Area. Major roadways serving the site are described below. OTS' review of existing and planned

transportation facilities is based on the 2010 Revised Countywide Transportation Plan (2010 CTP) and the 2003 Bicycle & Pedestrian Mobility Master Plan (2003 Bike & Ped Plan).

**John Mosby Highway (U.S. Route 50)** (segment from approximately 2,000 feet west of the Route 50/Goshen Road intersection east to Loudoun County Parkway) is currently a four-lane median divided (U4M) facility, largely with controlled access. According to the latest (2008) VDOT counts, this segment of Route 50 carries approximately 15,000 vehicles per day. Currently, a median crossover is in place at the Goshen Road/Fleetwood Road intersection, with stop signs in place on the side streets. Traffic signals and turn lanes on Route 50 are in place at both the Stone Springs Boulevard and Gum Spring Road intersections. The 2010 CTP designates the ultimate condition of the segment of Route 50 (from the Lenah Loop Road east to Northstar Boulevard) as a four-lane divided (R4M) controlled access minor arterial. East of Northstar Boulevard, the 2010 CTP designates the ultimate condition Route 50 as a six-lane divided (R6M) limited access principal arterial. Grade-separated interchanges are planned at three locations along this segment of Route 50: (1) Northstar Boulevard (Route 659 Relocated); (2) West Spine Road (Route 606 Extended), and (3) Loudoun County Parkway. East of Northstar Boulevard, all at-grade access is ultimately planned to be terminated.

The 2003 Bike & Ped Plan categorizes Route 50 as a “baseline connecting roadway” along which bicycle and pedestrian facilities are envisioned in the future. There are currently no bicycle/pedestrian facilities along Route 50 in the vicinity of the Goshen Road/Fleetwood Road intersection or the Gum Spring Road/West Spine Road intersections. The 2003 Bike & Ped Plan and the 2010 CTP do not envision bicycle and pedestrian facilities on limited access roadways (2003 Bike & Ped Plan, Roadway Planning and Design Policy 1, pg. 26; 2010 CTP, Appendix 6, Table Footnote); such facilities are more appropriately located along parallel roads (e.g., Tall Cedars Parkway) within the Route 50 corridor.

**Goshen Road (Route 616)** is an existing local road between Route 50 and Braddock Road which bisects the school site. According to the latest (2008) VDOT count data, Goshen Road carries approximately 450 vehicles per day. As a local road, it is not part of the CTP network. Goshen Road intersects Route 50 opposite Fleetwood Road at a median crossover, with stop signs in place on the side streets. The northernmost segment of Goshen Road, from Route 50 south to the southern entrance of The Boyd School (former Arcola Elementary School), is a paved section approximately 20 feet in width. This segment of Goshen Road is proposed (under approved CPAP 2007-0018) to be improved to an urban two-lane (U2) section and realigned to intersect future Westport Boulevard at a new intersection approximately 500 feet south of Route 50. A five-foot sidewalk is proposed along the western side of this new road section (this realigned segment of Goshen Road is proposed to be renamed **Marrwood Place** in the future). The remainder of Goshen Road, from the southern entrance to The Boyd School south to Braddock Road, is an unpaved rural section to which no improvements are planned. The Applicant has requested that the Board of Supervisors abandon the segment of Goshen Road from the northern entrance to the proposed school site south to Braddock Road.

**Northstar Boulevard (Route 659 Relocated)** is a planned new roadway corridor that would run from Belmont Ridge Road (Existing Route 659) in the Brambleton development south to Route 50, continuing south to connect with the future Route 234 Bypass in Prince William County. A

grade-separated interchange is planned at Route 50. The 2010 CTP calls for the segment of Northstar Boulevard between Route 50 and Braddock Road to ultimately be a controlled access, six-lane divided (U6M) minor arterial within a 120-foot ROW. Full ROW (120 feet) has been proffered for the segment of Northstar Boulevard between Tall Cedars Parkway and Braddock Road by the Stone Ridge (ZMAP 2006-0011), C.D. Smith (ZMAP 2002-0003), and Braddock Crossing (ZMAP 2003-0012) rezonings; these developments have also proffered to construct the eastern half-section (i.e., two ultimate northbound lanes) of this segment of roadway. Stone Ridge has also proffered to reserve ROW for the segment of Northstar Boulevard on its site north of Tall Cedars Parkway; there are no current plans to construct this segment of roadway.

The 2003 Bike & Ped Plan categorizes Northstar Boulevard as a “baseline connecting roadway” along which bicycle and pedestrian facilities are envisioned in the future. For six-lane roads, the 2010 CTP calls for 10-foot multi-use trails on each side of the roadway; a multi-use trail is depicted on the most recently approved Stone Ridge rezoning plat (ZMAP 2006-0011).

**Braddock Road (Route 620/Route 705)** (segment between Gum Spring Road, Northstar Boulevard, and the Lenah Loop Road) is currently constructed as a paved, two-lane (U2) facility from Gum Spring Road west to the vicinity of Great Berkhamstead Drive (the entrance to the Stratshire Crossing (Braddock Crossing) development, west of the power lines), and as an unpaved facility west of that point. According to the Applicant’s traffic study, Braddock Road currently carries approximately 2,900 daily vehicle trips just west of Gum Spring Road and approximately 400 daily vehicle trips in the vicinity of Goshen Road. Between Gum Spring Road and Northstar Boulevard, the 2010 CTP classifies Braddock Road as a major collector and calls for its ultimate condition to be widened to a four-lane (U4M) divided section. Between Northstar Boulevard and the Lenah Loop Road, the 2010 CTP classifies Braddock Road as a minor collector and calls for its ultimate condition to be a two-lane (R2) undivided section. Construction of future improvements along Braddock Road is anticipated to be concurrent with adjacent development.

The 2003 Bike & Ped Plan categorizes Braddock Road as a “baseline connecting roadway” along which bicycle and pedestrian facilities are envisioned in the future. For four-lane roads, the 2010 CTP calls for a 10-foot multi-use trail on one side of the roadway and a six-foot sidewalk on the other side. Multi-use trails are in place along segments of both the north and south sides of Braddock Road west of Gum Spring Road where the road has been improved.

**Tall Cedars Parkway** is the Route 50 South Collector Road. It is classified as a major collector by the 2010 CTP and is currently constructed to its ultimate four-lane divided (U4M) condition within Stone Ridge, from Gum Spring Road west to beyond the new Arcola Elementary School (near the location of its future intersection with Northstar Boulevard). According to the June 2009 traffic study for the Stone Ridge Commercial rezoning (ZMAP 2006-0011), Tall Cedars Parkway carries approximately 1,170 daily vehicle trips just east of Stone Springs Boulevard. West of Northstar Boulevard, Tall Cedars Parkway is planned as a two-lane (R2) roadway west to the Lenah Loop Road. Right-of-way (ROW) reservation for this future roadway has been identified as part of previous Stone Ridge rezoning approvals (including ZMAP 2006-0011) and as part of the approved Marrwood, Westport and Lenah preliminary subdivisions (SBPL 2007-

0013, SBPL 2006-0040 and SBPL 2005-0041, respectively). There are no current plans to construct this roadway.

The 2003 Bike & Ped Plan categorizes Tall Cedars Parkway as a “baseline connecting roadway” along which bicycle and pedestrian facilities are envisioned in the future. For four-lane roads, the 2010 CTP calls for a 10-foot multi-use trail on one side of the roadway and a six-foot sidewalk on the other side. A multi-use trail is in place along the north side of the existing segment of Tall Cedars Parkway within Stone Ridge (from Gum Spring Road west to Arcola Elementary School).

Stone Springs Boulevard (existing segment south of Route 50) is a four-lane divided (U4M) local secondary road which functions as the main north-south route through Stone Ridge. As a local road, it is not part of the CTP network. According to the June 2009 traffic study for the Stone Ridge Commercial rezoning (ZMAP 2006-0011) Stone Springs Boulevard carries approximately 15,000 daily vehicle trips just south of Route 50 and approximately 4,400 daily vehicle trips just north of Tall Cedars Parkway. Signalization is in place at the Route 50 intersection. As part of the approved Glascock Field rezoning (ZMAP 2006-0007), Stone Springs Boulevard will be extended north of Route 50 and tie into existing Gum Spring Road in the vicinity of Glascock Boulevard (the Route 50 North Collector Road). There are various segments of multi-use trails and sidewalks in place along Stone Springs Boulevard between Route 50 and Tall Cedars Parkway.

Gum Spring Road (Existing Route 659) (segment south of Route 50) is currently built as a two-lane (R2) section between Route 50 and Tall Cedars Parkway, and as a four-lane divided (U4M) section between Tall Cedars Parkway and Braddock Road. Between Route 50 and Tall Cedars Parkway, the West Spine Road (also referred to as Route 606 Extended) is currently partially constructed and will ultimately replace Gum Spring Road between Route 50 and Tall Cedars Parkway (intersecting Route 50 at a point approximately 1,000 feet east of the existing Route 50/Gum Spring Road intersection). South of Tall Cedars Parkway, the West Spine Road will follow the alignment of Gum Spring Road south to Prince William County. The 2010 CTP calls for the West Spine Road to ultimately be a four-lane divided (U4M/R4M) major collector south of Route 50; a grade-separated interchange is planned at Route 50. Based on the latest (2008) traffic count data from VDOT, Gum Spring Road carries 9,600 daily vehicle trips between Route 50 and Braddock Road.

The 2003 Bike & Ped Plan categorizes the West Spine Road as a “baseline connecting roadway” along which bicycle and pedestrian facilities are envisioned in the future. For four-lane roads, the 2010 CTP calls for a 10-foot multi-use trail on one side of the roadway and a six-foot sidewalk on the other side. Currently, multi-use trails are in place along segments of the West Spine Road between Tall Cedars Parkway and Braddock Road.

### **Review of Applicant’s Traffic Study**

The Applicant’s revised traffic study (dated June 9, 2010) documents existing, background (without the proposed schools), and total future traffic conditions (2015 and 2020) for the proposed schools. The high school is anticipated to open in 2012, while the elementary school is

anticipated to open in 2015. The study analyzed seven existing and future intersections in the vicinity of the site and reviewed adjacent existing and future roadway segments. The traffic study distinguishes two separate peak hours for the proposed high school and elementary school: the high school peak hours are 8:00 AM to 9:00 AM and 3:30 PM to 4:30 PM; the elementary school peak hours are 7:00 AM to 8:00 AM and 2:15 PM to 3:15 PM. OTS staff review of this document is as follows:

#### **Existing (2009) Traffic Volumes and Level of Service (LOS)**

The existing roadway network (existing lane use and traffic control) is illustrated on Figure 3 in *Attachment 2*. Existing traffic volumes and LOS for the high school peak hours are shown on Figures 4A, 5A, and Table 2A in *Attachments 3, 4 & 5*. Existing traffic volumes and LOS for the elementary school peak hours are shown on Figures 4B, 5B, and Table 2B in *Attachments 6, 7 & 8*.

During the proposed high school peak hours, the study indicates that all intersections and approaches analyzed operate at acceptable LOS (LOS D or better) during both the AM and PM peak hours, except for the Braddock Road/Gum Spring Road intersection (Intersection 3), where all approaches operate at LOS F during the AM peak hour. It is noted that the study analyzed this intersection prior to activation of the traffic signal at this location.

During the proposed elementary school peak hours, the study indicates that the southbound approach of the Route 50/Goshen Road/Fleetwood Road unsignalized intersection (Intersection 1) operates at LOS E during the AM peak hour, while the eastbound, northbound, and southbound approaches at the Braddock Road/Gum Spring Road intersection (Intersection 3) operate at LOS E or below during the AM peak hour. Again, it is noted that the study analyzed this intersection prior to activation of the traffic signal at this location. All other intersections and approaches operate at acceptable LOS (LOS D or better) during both the AM and PM peak hours.

#### **Background (Year 2012) Traffic Volumes and LOS (Without Development)**

The study assumed regional background growth at 2% per year for major roads in the study area, as well as the addition of traffic from several approved but unbuilt developments in the area.

The assumed roadway network for 2012 background conditions is illustrated on Figure 10 in *Attachment 9*; assumed improvements include the paving of a half-section (two lanes) of Northstar Boulevard between Tall Cedars Parkway and Braddock Road, along with the paving of a half-section (two lanes) of Braddock Road from the current end of pavement near Great Berkhamstead Drive (entrance to the Stratshire Crossing (Braddock Crossing) development) west to Goshen Road. Separate eastbound and westbound left turn lanes on Braddock Road at Gum Spring Road (Intersection 3) are also assumed.

Year 2012 forecasted background traffic volumes and LOS for the high school peak hours are shown on Figures 8, 9, and Table 3 in *Attachments 10, 11 & 12*. During the proposed high school peak hours, the study indicates that the southbound approach of the Route 50/Goshen Road/Fleetwood Road unsignalized intersection (Intersection 1) is forecast to operate at LOS E

during the PM peak hour. The signalized Gum Spring Road/Braddock Road intersection (Intersection 3) is forecast to operate at overall LOS E during the AM peak hour, with the eastbound and westbound approaches forecast to operate at LOS E or below (the study indicates that the addition of separate eastbound and westbound left turn lanes on Braddock Road will improve these approaches and the overall LOS at this intersection to acceptable levels (LOS D or better) during both the AM and PM peak hours).

Because the elementary school is not slated to open until 2015, the elementary school analysis is not included for year 2012 background conditions.

### **High School Trip Generation (Year 2012)**

Table 4A in the Applicant's traffic study (*see Attachment 13*) indicates that the proposed high school would generate 756 AM peak hour, 522 PM peak hour and 2,478 daily vehicle trips. This information is based on rates and equations (Land Use Code 530) for a high school from the *Trip Generation Manual, 8<sup>th</sup> Edition, Institute of Transportation Engineers (ITE)*. Table 4B (*see Attachment 13*) compares the trip generation for uses allowed on the site by current zoning (31 single family dwellings) and the proposed high school. Based on rates and equations from the *Trip Generation Manual, 8<sup>th</sup> Edition*, the 31 single family dwellings (Land Use Code 210) would generate 32 AM peak hour, 37 PM peak hour and 354 daily vehicle trips. The proposed high school use represents an increase of 724 AM peak hour, 485 PM peak hour and 2,430 daily vehicle trips over the approved (by-right) residential use.

### **High School Trip Distribution**

The traffic study was revised to incorporate the high school attendance boundaries/catchment area adopted by the School Board in May 2010 (the School Board's adopted service plan is referred to in the study as Alternative 3). Figure 13 (*Attachment 14*) depicts the distribution and assignment of high school generated trips based on the adopted School Board service plan.

### **Total Future (Year 2012) Traffic Volumes and LOS with High School**

The assumed roadway network for 2012 total future conditions is illustrated on Figure 20 in *Attachment 15*; in addition to the improvements assumed under 2012 background conditions, a westbound right turn lane and a southbound left turn lane at the unsignalized Braddock Road/Northstar Boulevard intersection (Intersection 5) are assumed to be in place, as are separate left and right turn lanes and major street stop control (stop signs) at the two site entrances on Northstar Boulevard (Northstar Boulevard/Road B (Intersection 6) and Northstar Boulevard/Road A (Intersection 7)). Also, it is assumed that the Braddock Road/Goshen Road intersection (Intersection 4) will be closed with the proposed abandonment of the southern section of Goshen Road.

Year 2012 total future (with the high school) traffic volumes and LOS for the high school peak hours are shown on Figures 16, 19 and Table 6C in *Attachments 16, 17 & 18*. During the high school peak hours, the northbound approach of the Route 50/Goshen Road/Fleetwood Road intersection (Intersection 1) is forecast to operate at LOS E in the AM peak hour, while the southbound approach at the same intersection is forecast to operate at LOS E in the PM peak

hour. All other intersections analyzed are forecast to operate at acceptable LOS (LOS D or better) during both the AM and PM peak hours.

Because the elementary school is not slated to open until 2015, the elementary school analysis is not included for year 2012 total future conditions.

### **Background (Year 2015) Traffic Volumes and LOS (with High School but without Elementary School)**

The study assumed regional background growth at 2% per year for major roads in the study area, as well as the addition of traffic from several approved but unbuilt developments in the area.

The assumed roadway network for 2015 background conditions is illustrated on Figure 34 in *Attachment 19*; in addition to the improvements/changes assumed under 2012 total future conditions, the study assumes the completion of a four-lane section of the West Spine Road between Tall Cedars Parkway and Route 50, as well as the realignment of Goshen Road with future Westport Boulevard (just south of Route 50) and the installation of a traffic signal at the Route 50/Goshen Road intersection (Intersection 1).

Year 2015 forecasted background traffic volumes and LOS for the high school peak hours are shown on Figures 24, 30, and Table 7C in *Attachments 20, 21 & 22*. The study indicates that all intersections analyzed are forecast to operate at acceptable LOS (LOS D or better) during both the AM and PM peak hours.

Year 2015 forecasted background traffic volumes and LOS for the elementary school peak hours are shown on Figures 27, 33, and Table 7F in *Attachments 23, 24 & 25*. The study indicates that all intersections analyzed are forecast to operate at acceptable LOS (LOS D or better) during both the AM and PM peak hours.

### **High School and Elementary School Trip Generation (Year 2015)**

Table 9A in the Applicant's traffic study (*see Attachment 26*) indicates that the proposed high school and elementary school together would generate 1,108 AM peak hour, 759 PM peak hour and 3,913 daily vehicle trips. This information is based on rates and equations (Land Use Code 530 and Land Use Code 520) for a high school and an elementary school from the *Trip Generation Manual, 8<sup>th</sup> Edition, Institute of Transportation Engineers (ITE)*. Table 9D (*see Attachment 26*) compares the trip generation for uses allowed on the site by current zoning (31 single family dwellings) and the proposed high school and elementary school. Based on rates and equations from the *Trip Generation Manual, 8<sup>th</sup> Edition*, the 31 single family dwellings (Land Use Code 210) would generate 32 AM peak hour, 37 PM peak hour and 354 daily vehicle trips. The proposed high school and elementary school uses combined represent an increase of 1,076 AM peak hour, 722 PM peak hour and 3,559 daily vehicle trips over the approved (by-right) residential use.

Due to the schedules of both the elementary school and high school (*see Table 8 in Attachment 26*), the study notes that there will be overlap of elementary school traffic with high school traffic during the high school PM peak hour of 3:30 PM to 4:30 PM. Based on actual field data



at other Loudoun County schools, the study estimates this overlap to be 30%. As shown in Table 9B in *Attachment 26*, the overall traffic generated by the high school and elementary school during the high school peak hour is 756 AM peak hour, 593 PM peak hour and 3,913 daily vehicle trips. A similar overlap due to scheduling also holds true during the elementary school peak hour in which the high school traffic will overlap by an estimated 25% during the elementary school AM peak hour (7:00 AM to 8:00 AM) and 30% during the elementary school PM peak hour (2:15 PM to 3:15 PM). As shown in Table 9C in *Attachment 26*, the overall traffic generated by the high school and elementary school during the elementary school peak hour is 541 AM peak hour, 394 PM peak hour and 3,913 daily vehicle trips.

### **Elementary School Trip Distribution**

The direction of approach for the proposed elementary school trips is based on information provided by the Loudoun County Public Schools. Based on this information, the study estimates that 81% of the elementary school traffic will access the site to and from the west via Braddock Road, 11% will access the site to and from the west via Route 50, and 8% to and from the north via Goshen Road. Figure 38A (*Attachment 27*) depicts the distribution and assignment of elementary school generated trips.

### **Total Future (Year 2015) Traffic Volumes and LOS with High School and Elementary School (Site Buildout)**

The assumed roadway network for 2015 total future conditions (site buildout) is illustrated on Figure 47 in *Attachment 28*. No additional improvements/changes to the road network beyond those identified under 2015 background conditions are assumed by the study.

Year 2015 total future traffic volumes and LOS for the high school peak hours are shown on Figures 37C, 43, and Table 10C in *Attachments 29, 30 & 31*. The study indicates that all intersections analyzed are forecast to operate at acceptable LOS (LOS D or better) during both the AM and PM peak hours.

Year 2015 total future traffic volumes and LOS for the elementary school peak hours are shown on Figures 40C, 46, and Table 10F in *Attachments 32, 33 & 34*. The study indicates that all intersections analyzed are forecast to operate at acceptable LOS (LOS D or better) during both the AM and PM peak hours.

### **Total Future (Year 2020) Traffic Volumes and LOS with High School and Elementary School (Post Site Buildout)**

The assumed roadway network for 2020 total future conditions (post site buildout) is illustrated on Figure 60 in *Attachment 35*. In addition to the network assumed under 2015 total future conditions, the study assumes signalization of the Northstar Boulevard/Braddock Road intersection (Intersection 5), as well as the opening of the segment of Northstar Boulevard south of Braddock Road, with through lanes and turn lanes to access this new segment. A separate eastbound left turn lane on Braddock Road to northbound Northstar Boulevard is also assumed.



Year 2020 total future (post site buildout) traffic volumes and LOS for the high school peak hours are shown on Figures 50, 56, and Table 11C in *Attachments 36, 37 & 38*. During the high school peak hour, the study indicates that the northbound and southbound approaches at the unsignalized Northstar Boulevard/Braddock Road intersection (Intersection 5) are forecast to operate at LOS F during both the AM and PM peak hours (the installation of a traffic signal is identified as mitigation to restore overall LOS to acceptable levels (LOS C) during both the AM and PM peak hours). The signalized Gum Spring Road/Braddock Road intersection (Intersection 3) is forecast to operate at LOS E or below during both the AM and PM peak hours (the installation of a second through lane on Braddock Road and additional left and right turn lanes on Braddock Road are identified as mitigation measures to restore overall LOS at this intersection to acceptable levels (LOS D or better) during both peak hours). The eastbound approach of the unsignalized Tall Cedars Parkway/West Spine Road intersection (Intersection 2) is forecast to operate at LOS F during both the AM and PM peak hours (the installation of a traffic signal is identified as mitigation to restore overall LOS at this intersection to acceptable levels (LOS B) during both peak hours). The westbound Route 50 left turn movement to southbound Goshen Road (Intersection 1, as a signalized intersection) is forecast to operate at LOS E during the AM peak hour; the eastbound left turn movement to northbound Fleetwood Road at the same intersection is forecast to operate at LOS E during the PM peak hour. The study indicates that all other intersections analyzed are forecast to operate at acceptable LOS (LOS D or better) during both the AM and PM peak hours.

Year 2020 total future (post site buildout) traffic volumes and LOS for the elementary school peak hours are shown on Figures 53, 59, and Table 11F in *Attachments 39, 40 & 41*. For the Northstar Boulevard/Braddock Road intersection (Intersection 5), the Gum Spring Road/Braddock Road intersection (Intersection 3), and the Tall Cedars Parkway/West Spine Road intersection (Intersection 2), the study indicates similar unacceptable LOS conditions at each of these intersections as during the high school peak hours described above; the study proposes the same mitigation measures to restore LOS at these intersections to acceptable LOS as in the high school peak hours. For the northbound approach on Goshen Road at Route 50 (Intersection 1, as a signalized intersection), the study indicates that this movement is forecast to operate at LOS E during the AM peak hour. The study indicates that all other intersections analyzed are forecast to operate at acceptable LOS (LOS D or better) during both the AM and PM peak hours.

### **Transportation Comments**

1. In the Statement of Justification, the Applicant indicates that it will construct a half-section (two lanes) of Northstar Boulevard (Route 659 Relocated) between Tall Cedars Parkway and Braddock Road and pave a half-section (two lanes) of Braddock Road from the end of the existing pavement (in the vicinity of Great Berkhamstead Drive (the entrance to the Stratshire Crossing (Braddock Crossing) development) west to Northstar Boulevard and Goshen Road. These improvements are proposed to be in place prior to the opening of the proposed high school, if not already constructed by others. These road improvements necessary to access the school site and are recommended to be included in the future proffers and conditions associated with these applications.

2. There are existing proffered commitments from the Stone Ridge, C.D. Smith, and Braddock Crossing developments to construct the Northstar Boulevard and Braddock Road improvements described in Comment 1 above. The Applicant indicates that at such time as the surrounding properties (Stone Ridge, C.D. Smith, and Braddock Crossing) reach the development thresholds that would have required the construction of these improvements, the cash-in-lieu of construction clauses in the respective proffers statements would be triggered. This should be verified by appropriate County staff.
3. The Applicant should construct the eastbound right turn lane and the southbound left turn lane at the Northstar Boulevard/Braddock Road intersection prior to the opening of the high school in 2012 (these turn lanes are identified in the traffic study as being warranted at that time). The Applicant should seek reimbursement for these improvements to the extent that they have been proffered as part of other developments in the area.
4. The Applicant should construct the separate left and right turn lanes on Northstar Boulevard at Road A and Road B (the two entrances to the school site) prior to the opening of the high school in 2012, as recommended by the traffic study.
5. Tall Cedars Parkway has been constructed by Stone Ridge west to the vicinity of future Northstar Boulevard. Should any additional construction be necessary to tie this existing roadway to the proposed half-section of Northstar Boulevard described in Comment 1 above, the Applicant should construct such improvements concurrent with the construction of Northstar Boulevard.
6. If not already constructed by others prior to the opening of the high school in 2012, the Applicant should construct the turn lanes recommended by the traffic study at the Gum Spring Road/Braddock Road intersection. Any necessary modifications to the existing traffic signal at this intersection should also be the responsibility of the Applicant if such modifications have not already been made by others. The Applicant should seek reimbursement for these improvements/modifications to the extent that they have been proffered as part of other developments in the area.
7. The Applicant has submitted a request to the Board of Supervisors to abandon the segment of Goshen Road (Route 616) from Road A south to Braddock Road in order to facilitate the development of the proposed high school and elementary school. OTS has received comments from various referral agencies regarding this proposed abandonment; these comments and the Applicant's responses (dated June 8, 2010) are provided as ***Attachment 42***. Of particular note is the comment from VDOT indicating that the abandonment cannot take place until the replacement section of roadway (Route 659 Relocated (Northstar Boulevard)) has been constructed and is accepted into the VDOT secondary system for maintenance. Further, OTS notes that VDOT does not accept half-sections of roadways (as is being proposed) for maintenance without a commitment from the County assuring the completion of the remaining half-section. These matters have the potential to delay the development of the proposed schools. Coordination and resolution of these matters with VDOT needs to occur in a timely manner, and all issues identified in the abandonment referral comments need to be resolved prior to the abandonment request moving forward for consideration by the Board of Supervisors.

8. Further discussion is recommended with the Applicant and VDOT regarding Goshen Road north of the site. The potential of cutting off site access from Goshen Road at the northern site boundary should be explored in order to limit additional vehicle trips on this substandard facility.
9. The plan set (Sheet 5) depicts an extensive pedestrian network for the proposed high school and elementary school. This network includes pedestrian trails to the south and west connecting to the Westport development, and to the north connecting to a portion of the Stone Ridge development. Commitments to construct the pedestrian network as shown on Sheet 5 should be included with these applications, including extensions of trails to logical termini within Westport and Stone Ridge when those developments are constructed. The proffered trail on the east side of Northstar Boulevard should be in place prior to the opening of the high school in 2012.
10. The Statement of Justification (Page 11) notes that all-way stop conditions (stop signs or traffic signals), crosswalks, and crossing guards are necessary to support walk zones to the proposed schools across Northstar Boulevard at both Road A and Road B. OTS notes that the referenced stop signs and crosswalks will require VDOT review and approval, and the Applicant should be responsible for providing appropriate warrant studies for the proposed all-way stop conditions on Northstar Boulevard at both Road A and Road B. Additionally, the Applicant should commit to the installation of traffic signals on Northstar Boulevard at Road A and Road B at such time as signals are warranted by the County or VDOT.
11. While not included in the scoping agreement, a significant percentage of high school site-generated traffic is anticipated by the traffic study to go through the Stone Springs Boulevard/Tall Cedars Parkway intersection. According to the June 2009 traffic study for the Stone Ridge Commercial rezoning (ZMAP 2006-0011), certain movements at this intersection are forecast to operate at failing LOS (LOS E or F) by 2015 even without the proposed schools in place. The Applicant should analyze this intersection and identify and commit to necessary mitigation measures to maintain/restore acceptable LOS (LOS D or better) at this intersection.

### **Conclusion**

**The Office of Transportation Services has no recommendation at this time. A recommendation will be provided when OTS has reviewed the Applicant's responses to the comments contained in this referral. Depending on the Applicant's responses, additional OTS comments may be necessary. OTS staff is available to meet with the Applicant and VDOT for further discussion of these applications.**

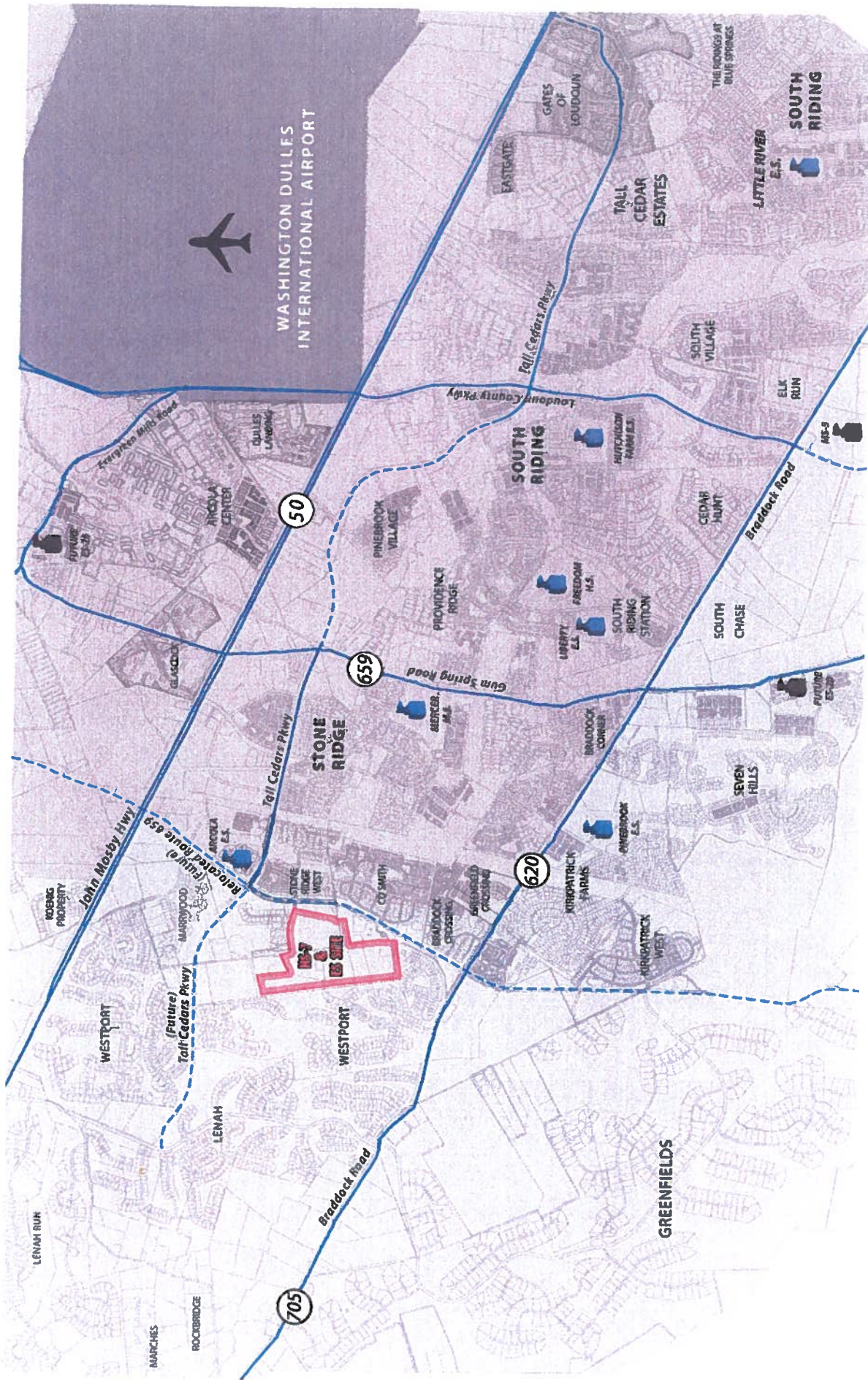
### **ATTACHMENTS**

1. Site Vicinity Map/Concept Plan
2. Existing Roadway Network (2009) (Traffic Study Figure 3)
3. Existing Traffic Volumes – High School Peak Hours (2009) (Traffic Study Figure 4A)
4. Existing Levels of Service – High School Peak Hours (2009) (Traffic Study Figure 5A)
5. Existing Intersection Capacity Analysis– High School Peak Hours (2009) (Traffic Study Table 2A)
6. Existing Traffic Volumes – Elementary School Peak Hours (2009) (Traffic Study Figure 4B)
7. Existing Levels of Service – Elementary School Peak Hours (2009) (Traffic Study Figure 5B)
8. Existing Intersection Capacity Analysis– Elementary School Peak Hours (2009) (Traffic Study Table 2B)

9. Assumed Background Roadway Network (2012) (Traffic Study Figure 10)
10. Background Traffic Volumes – High School Peak Hours (2012) (Traffic Study Figure 8)
11. Background Levels of Service – High School Peak Hours (2012) (Traffic Study Figure 9)
12. Background Intersection Capacity Analysis – High School Peak Hours (2012) (Traffic Study Table 3)
13. High School Trip Generation and Trip Generation Comparison (2012) (Traffic Study Tables 4A and 4B)
14. Distribution and Assignment of High School Generated Trips (2012) (Traffic Study Figure 13)
15. Assumed Total Future Roadway Network (2015) (Traffic Study Figure 20)
16. Total Future Traffic Volumes – High School Peak Hours (2015) (Traffic Study Figure 16)
17. Total Future Levels of Service – High School Peak Hours (2015) (Traffic Study Figure 19)
18. Total Future Intersection Capacity Analysis – High School Peak Hours (2015) (Traffic Study Table 6C)
19. Assumed Background Roadway Network (2015) (Traffic Study Figure 34)
20. Background Traffic Volumes – High School Peak Hours (2015) (Traffic Study Figure 24)
21. Background Levels of Service – High School Peak Hours (2015) (Traffic Study Figure 30)
22. Background Intersection Capacity Analysis – High School Peak Hours (2015) (Traffic Study Table 7C)
23. Background Traffic Volumes – Elementary School Peak Hours (2015) (Traffic Study Figure 27)
24. Background Levels of Service – Elementary School Peak Hours (2015) (Traffic Study Figure 33)
25. Background Intersection Capacity Analysis – Elementary School Peak Hours (2015) (Traffic Study Table 7F)
26. High School and Elementary School Trip Generation, Trip Generation Comparison, and Time Period Overlap (Traffic Study Tables 8, 9A, 9B, 9C and 9D)
27. Distribution and Assignment of Elementary School Generated Trips (2015) (Traffic Study Figure 38A)
28. Assumed Total Future Roadway Network (2015) (Traffic Study Figure 47)
29. Total Future Traffic Volumes – High School Peak Hours (2015) (Traffic Study Figure 37C)
30. Total Future Levels of Service – High School Peak Hours (2015) (Traffic Study Figure 43)
31. Total Future Intersection Capacity Analysis – High School Peak Hours (2015) (Traffic Study Table 10C)
32. Total Future Traffic Volumes – Elementary School Peak Hours (2015) (Traffic Study Figure 40C)
33. Total Future Levels of Service – Elementary School Peak Hours (2015) (Traffic Study Figure 46)
34. Total Future Intersection Capacity Analysis – Elementary School Peak Hours (2015) (Traffic Study Table 10F)
35. Assumed Total Future Roadway Network (2020) (Traffic Study Figure 60)
36. Total Future Traffic Volumes – High School Peak Hours (2020) (Traffic Study Figure 50)
37. Total Future Levels of Service – High School Peak Hours (2020) (Traffic Study Figure 56)
38. Total Future Intersection Capacity Analysis – High School Peak Hours (2020) (Traffic Study Table 11C)
39. Total Future Traffic Volumes – Elementary School Peak Hours (2020) (Traffic Study Figure 53)
40. Total Future Levels of Service – Elementary School Peak Hours (2020) (Traffic Study Figure 59)
41. Total Future Intersection Capacity Analysis – Elementary School Peak Hours (2020) (Traffic Study Table 11F)
42. Referral Comments and Applicant's Responses (June 8, 2010) for the Proposed Abandonment of Goshen Road (Route 616)

cc: Andrew Beacher, Acting Director, OTS

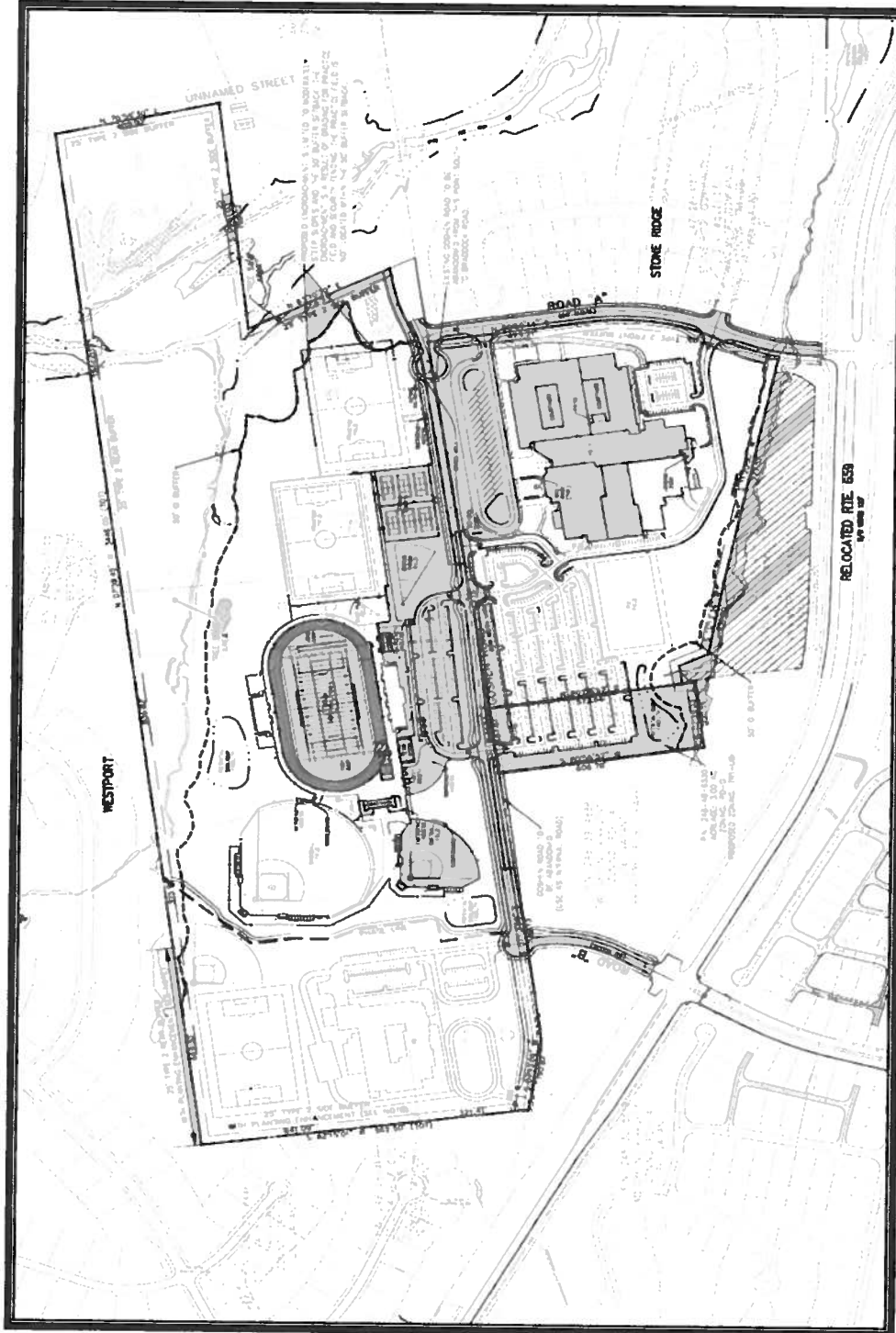




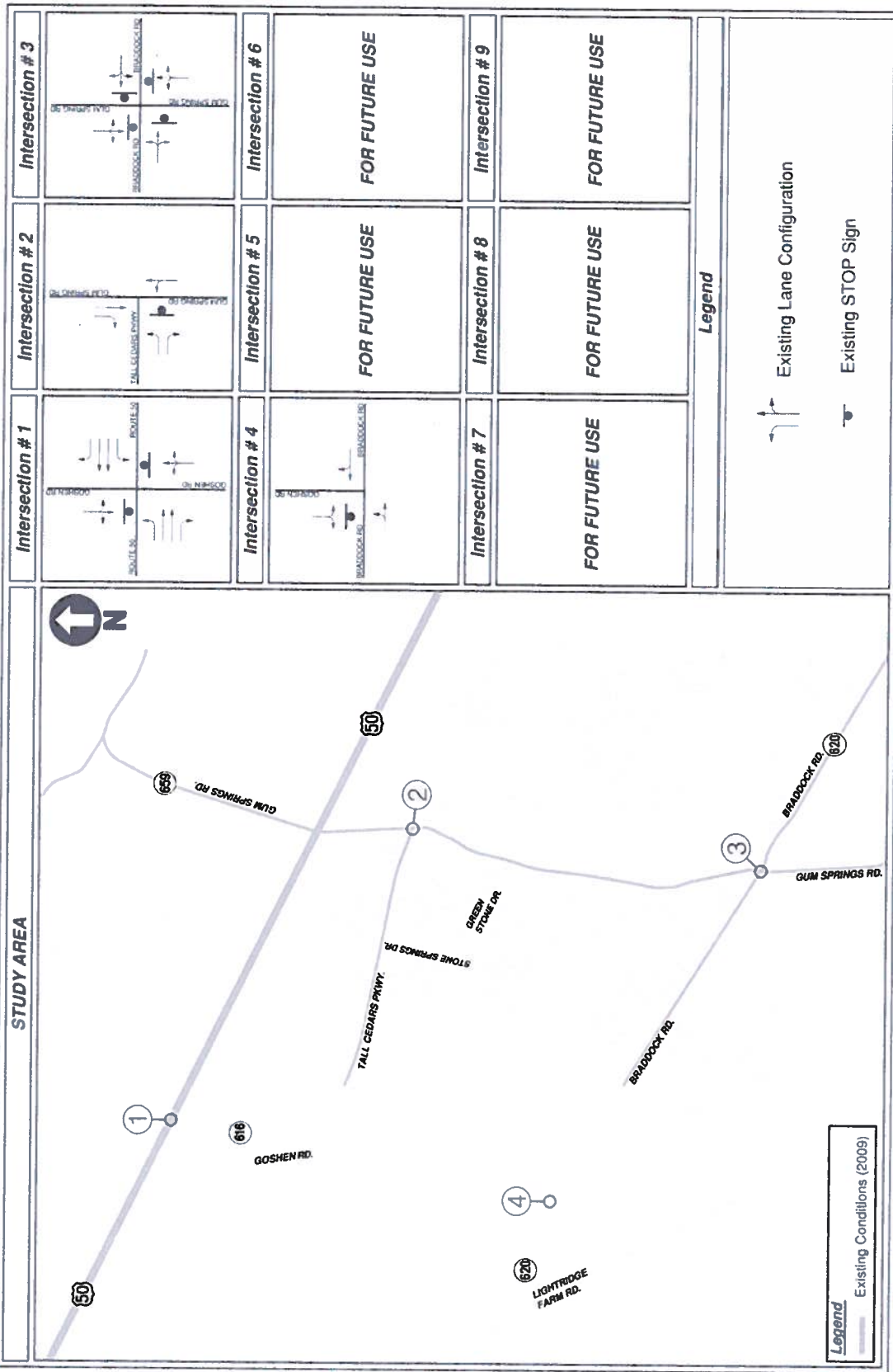
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Figure 2: Concept Plan

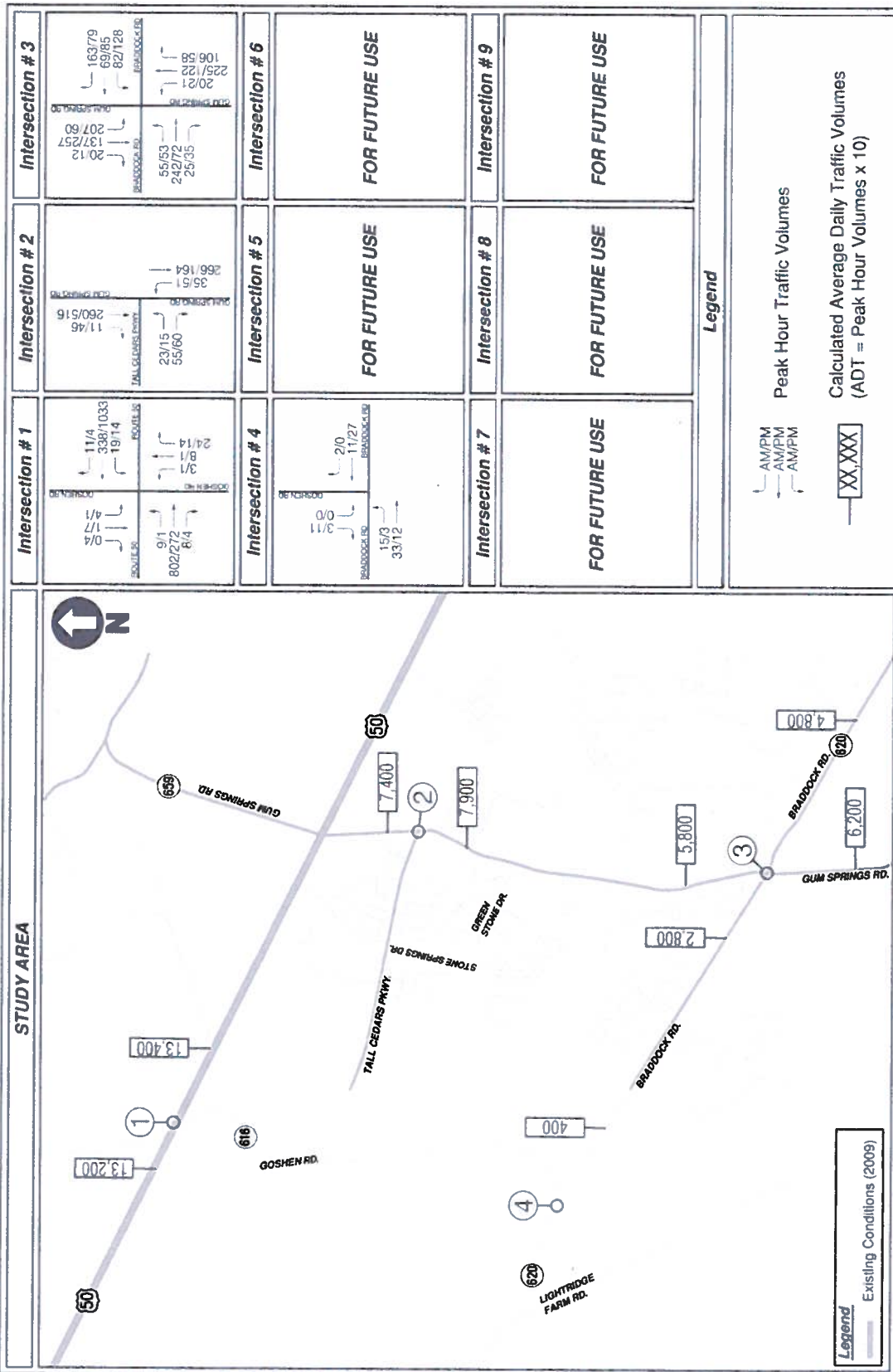




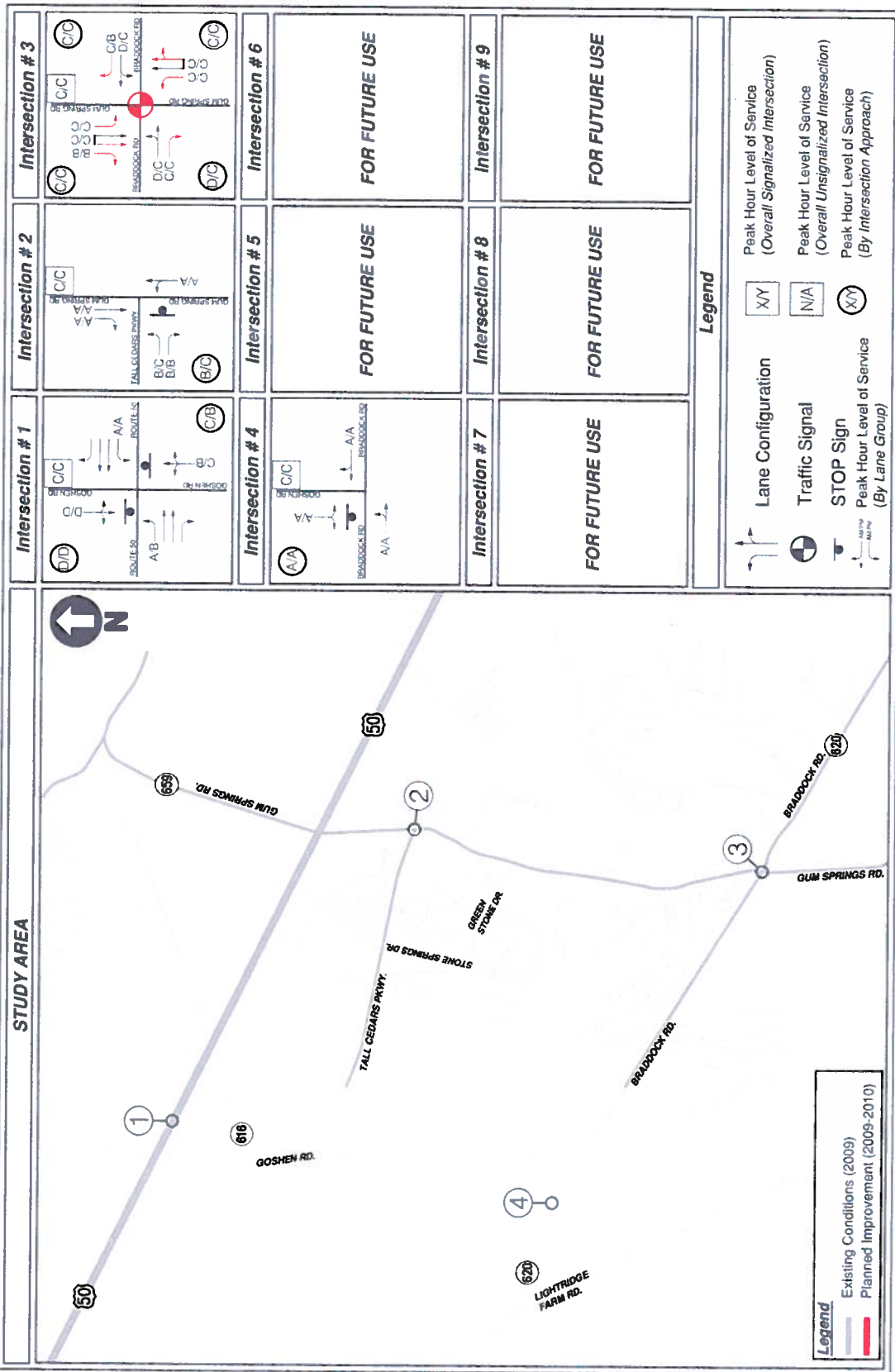


**Figure 3**  
Local Roadway Network (2009)





**Figure 4A**  
Existing Traffic Volumes (2009)  
High School Peak Hour  
(8:00 AM to 9:00 AM and 3:30 PM to 4:30 PM)



**Figure 5A**  
Existing Levels of Service (2009)  
High School Peak Hours  
(8:00 AM to 9:00 AM and 3:30 PM to 4:30 PM)

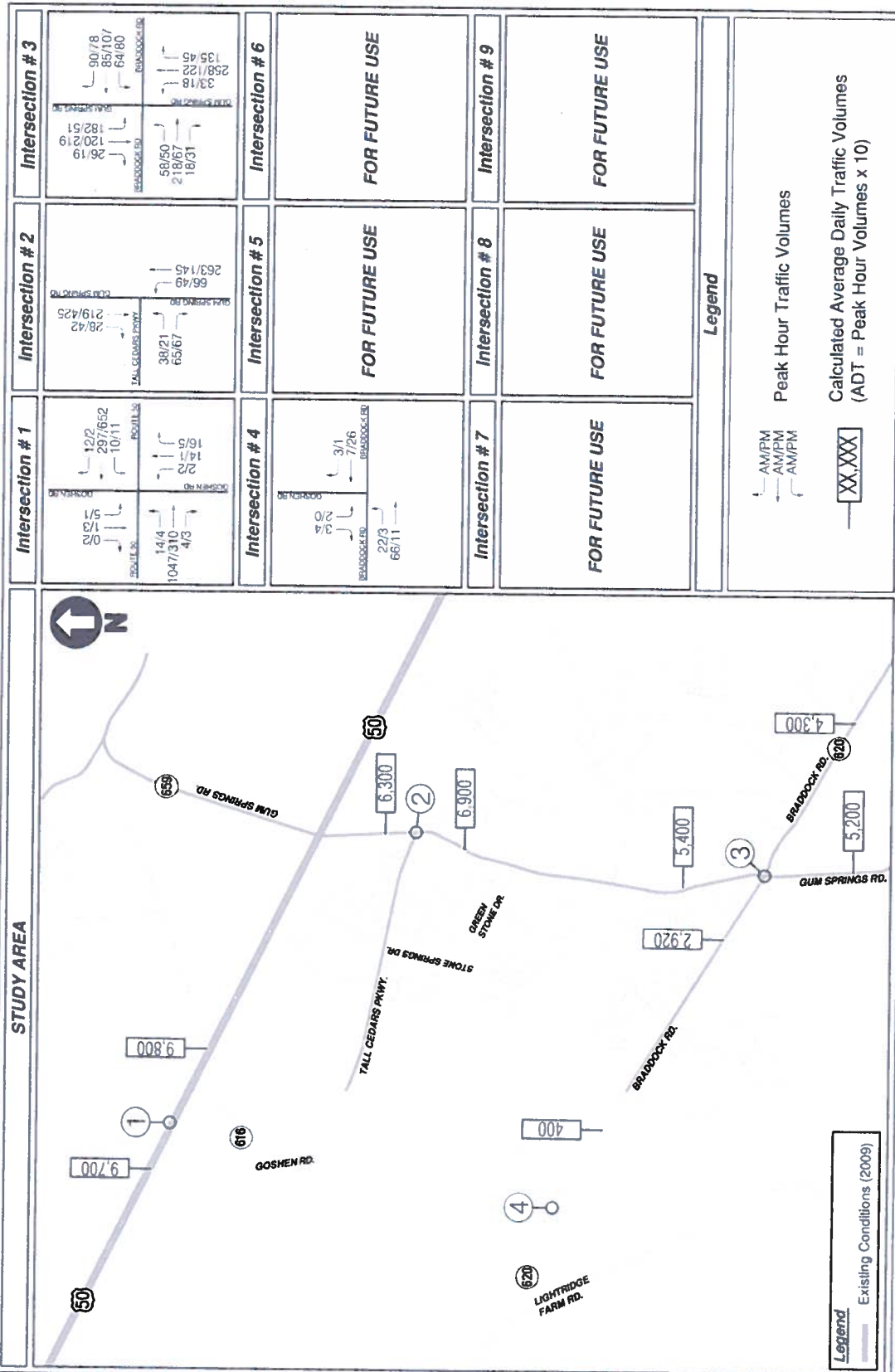
**Table 2A : Existing (2009) Intersection Capacity Analysis (HS Peak Hour)**

Existing Condition (2009) -HS Peak Hour													
Intersection	Movement	AM PEAK HOUR				PM PEAK HOUR							
		Movement/Lane Group		Approach		Intersection		Movement/Lane Group		Approach		Intersection	
		Delay (sec / veh)	LOS	Delay (sec / veh)	LOS	Delay (sec / veh)	LOS	Delay (sec / veh)	LOS	Delay (sec / veh)	LOS	Delay (sec / veh)	LOS
US Route 50 and Goshen Road (Unsignalized)	EB L	8.1	A					11.3	B				
	WB L	9.9	A					7.9	A				
	NB L/T/R	19.6	C	19.6	C	N/A		12.1	B	12.1	B	N/A	
	SB L/T/R	26.2	D	26.2	D			32.5	D	32.5	D		
Tail Cedars Parkway and Gum Spring Road (Unsignalized)	EB L	14.9	B					15.2	C				
	EB R	10.4	B	11.7	B			14.1	B	15.2	C	N/A	
	NB L/T	1.2	A			N/A		2.7	A				
	SB T	0.0	A					0.0	A				
Braddock Road and Gum Spring Road (Unsignalized)	EB R	0.0	A					0.0	A				
	WB L/T/R			60.5	F					14.1	B		
	NB L/T/R			57.1	F	N/A				20.9	C	N/A	
	SB L/T/R			88.3	F					14.4	B		
Overall Mitigation - Add a Signal Add a right turn lane				70.4	F					20.8	C		
	EB L/T	42.8	D					30.5	C				
	WB R	26.5	C	41.5	D			23.8	C	29.1	C		
	NB L	24.8	C	33.6	C			30.1	C	27.1	C		
Modify to a left turn lane, a through and a shared through right turn lane	EB L	29.5	C	34.6	C			18.8	B				
	WB T/R	34.9	C			C		24.2	C	27.5	C		
	NB L	21.2	C					27.8	C				
	SB T	23.8	C	21.6	C			21.8	C				
Braddock Road and Goshen Road (Unsignalized)	EB R	10.3	B					15.6	B	25.9	C		
	WB L/T	2.3	A					1.5	A				
	NB T/R	0.0	A			N/A		0.0	A			N/A	
	SB L/R	8.4	A	8.4	A			8.5	A	8.5	A		



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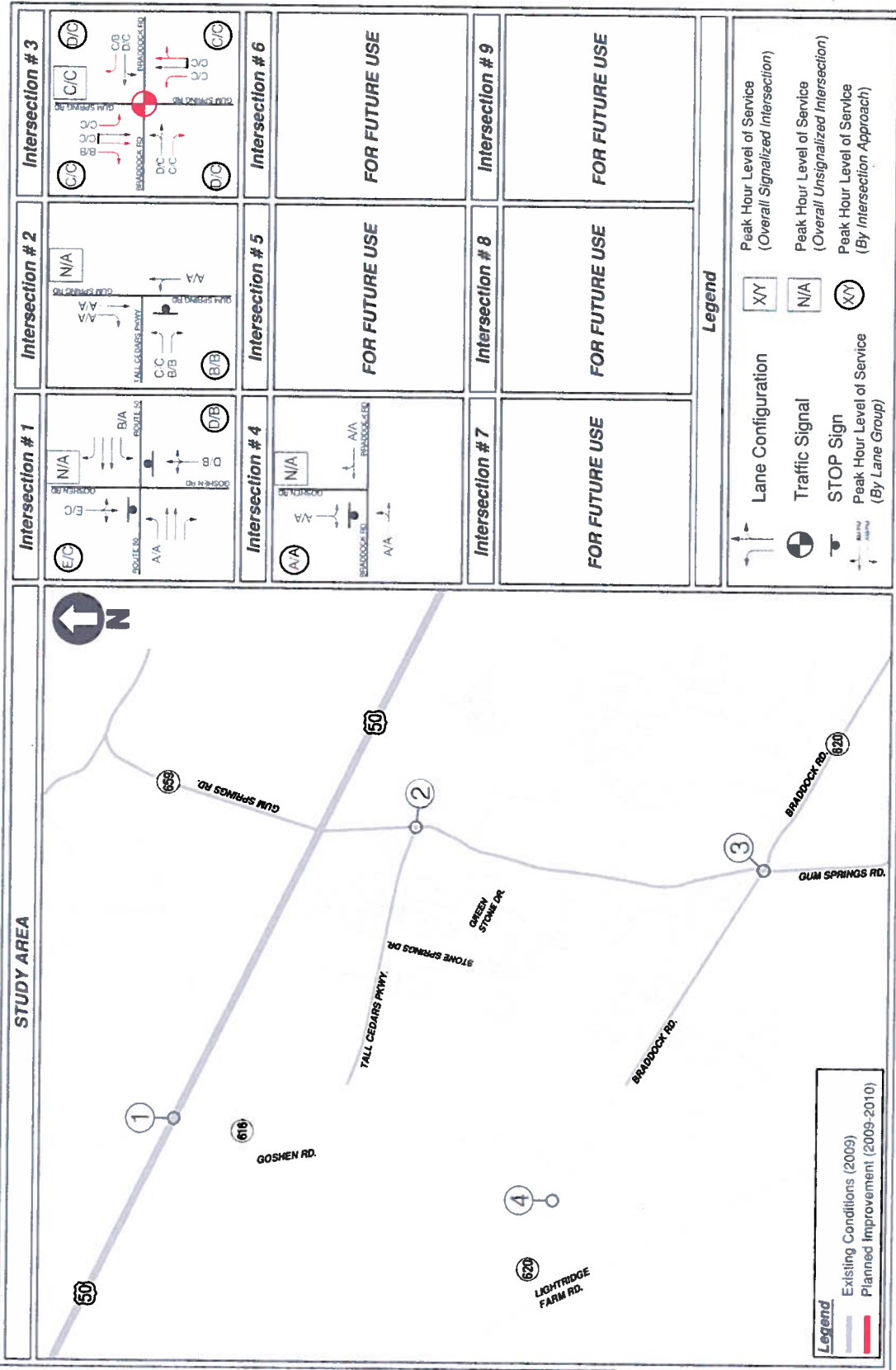


**Figure 4B**  
 Existing Traffic Volumes (2009)  
 Elementary School Peak Hour  
 (7:00 AM to 8:00 AM and 2:15 PM to 3:15 PM)



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**Figure 5B**  
Existing Levels of Service (2009)  
Elementary School Peak Hour  
(7:00 AM to 8:00 AM and 2:15 PM to 3:15 PM)

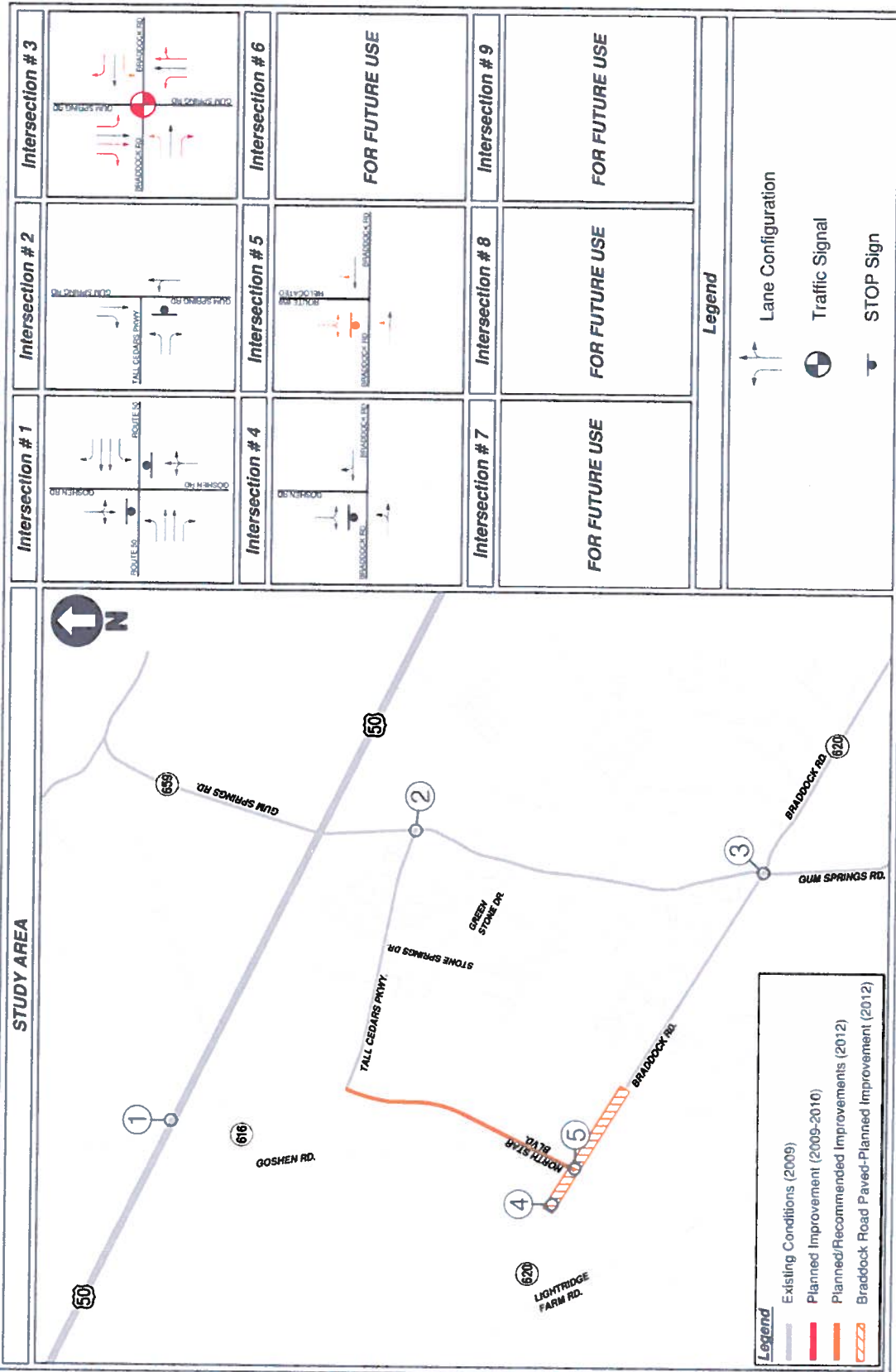
Table 2B : Existing (2009) Intersection Capacity Analysis (ES Peak Hour)

Intersection	Movement	AM PEAK HOUR						Existing Condition (2009) -ES Peak Hour					
		Movement/Lane Group			Approach			Intersection			PM PEAK HOUR		
		Delay (sec / veh)	LOS		Delay (sec / veh)	LOS		Delay (sec / veh)	LOS		Delay (sec / veh)	LOS	Intersection Delay (sec / veh) LOS
US Route 50 and Goshen Road (Unsignalized)	EB L	8.3	A										
	WB L	11.1	B										
	NB L/T/R	34.6	D		34.6	D					13.1	B	N/A
	SB L/T/R	35.2	E		35.2	E					19.1	C	N/A
Tail Cedars Parkway and Gum Spring Road (Unsignalized)	EB L	16.0	C										
	WB R	10.1	B		12.3	B					13.1	B	N/A
	NB L/T	2.0	A										
	SB T	0.0	A										
Braddock Road and Gum Spring Road (Unsignalized)	EB R	0.0	A										
	WB L/T/R				38.8	E					14.3	B	N/A
	NB L/T/R				25.6	D					16.3	C	N/A
	SB L/T/R				88.4	F					13.0	B	N/A
Overall Mitigation - Add a Signal					39.4	E					20.7	C	
Add a right turn lane	EB L/T	43.4	D		42.4	D							
	WB R	26.6	C								28.0	C	
	L/T	44.0	D										
	R	25.5	C		37.0	D					26.7	C	
Modify to a left turn lane, a through and a shared through right turn lane	NB L	29.0	C										
	T/R	34.9	C		34.4	C					26.5	C	
	L	21.2	C										
	T	23.4	C		21.1	C					24.7	C	
Braddock Road and Goshen Road (Unsignalized)	EB R	10.1	B										
	WB L/T	1.9	A										
	NB T/R	0.0	A										
	SB L/R	8.8	A		8.8	A					8.5	A	N/A



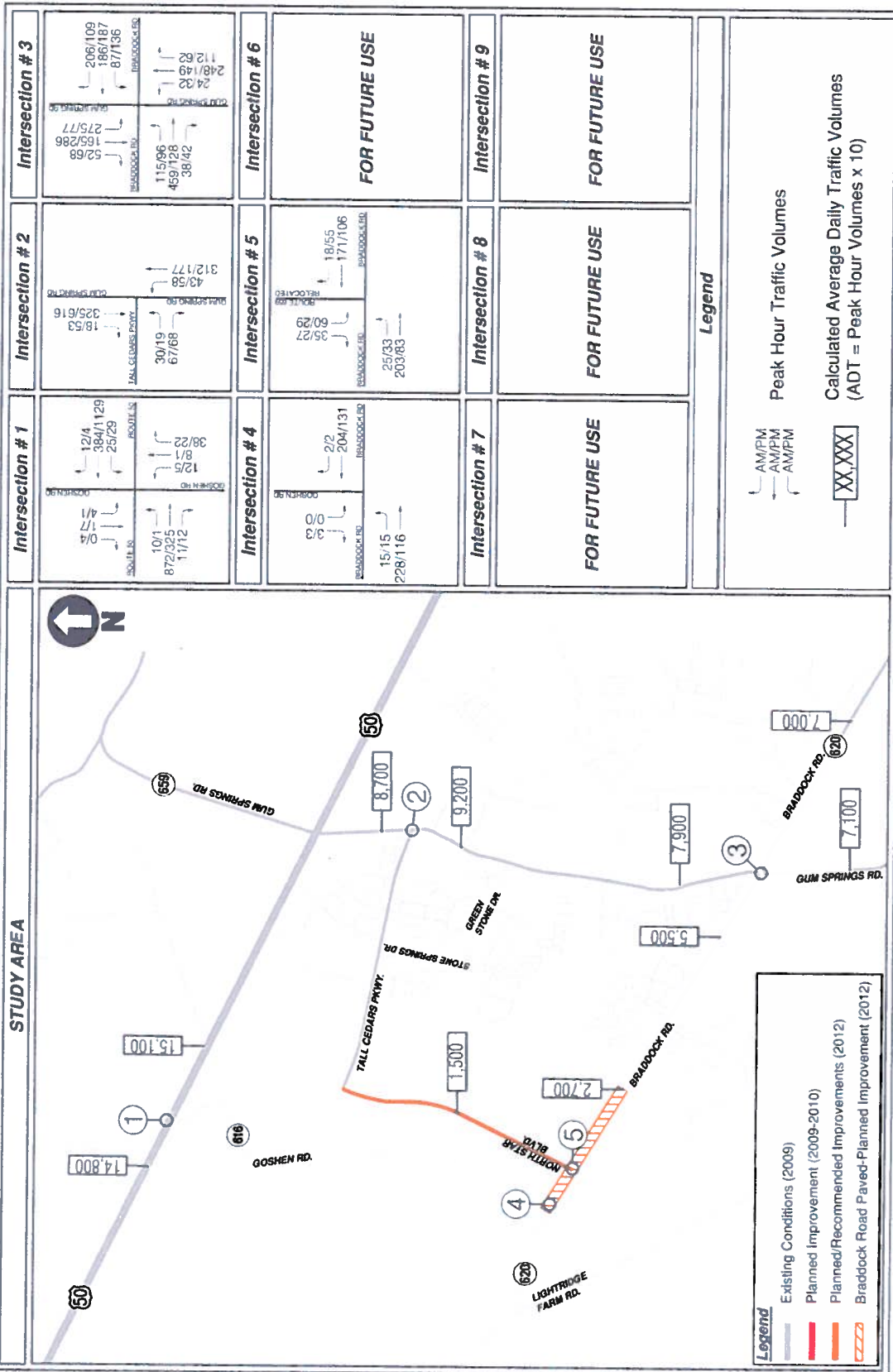


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**Figure 10**  
Future without Development Recommended Improvements (2012)



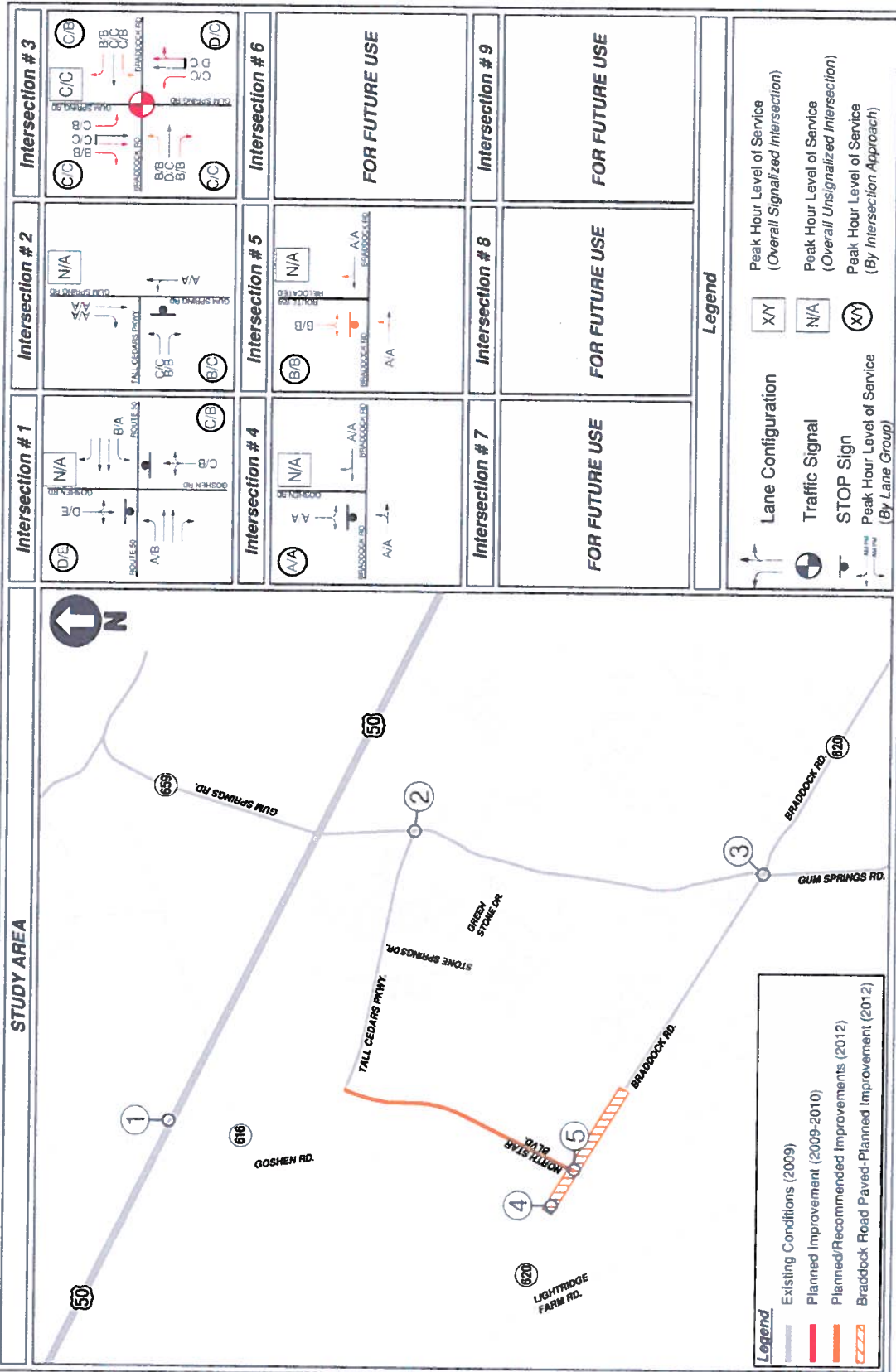


**Figure 8**  
Future Conditions without Development Traffic Volumes (2012)  
High School Peak Hour  
(8:00 AM to 9:00 AM and 3:30 PM to 4:30 PM)



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**Figure 9**  
Future Conditions without Development Levels of Service (2012)  
High School Peak Hour  
(8:00 AM to 9:00 AM and 3:30 PM to 4:30 PM)

Table 3: Future Conditions without Development (2012) Intersection Capacity Analysis

Future Background Conditions (2012) - HS Peak Hour																			
Intersection	Movement	AM PEAK HOUR						PM PEAK HOUR											
		Movement/Lane Group			Approach			Intersection			Movement/Lane Group			Approach			Intersection		
		Delay (sec / veh)	LOS		Delay (sec / veh)	LOS		Delay (sec / veh)	LOS		Delay (sec / veh)	LOS		Delay (sec / veh)	LOS		Delay (sec / veh)	LOS	
US Route 50 and Goshen Road (Unsignalized)	EB L	8.2	A																
	WB L	10.3	B																
	NB L/T/R	24.0	C			24.0	C												
	SB L/T/R	29.4	D			29.4	D												
Tail Cedars Parkway and Gum Spring Road (Unsignalized)	L	16.4	C			12.6	B												
	EB R	10.7	B																
	NB L/T	1.3	A																
	SB T	0.0	A																
Braddock Road and Gum Spring Road (Signalized)	SB R	0.0	A																
	EB L/T	153.1	F			145.3	F												
	EB R	26.4	C																
	L/T	87.9	E			61.8	E												
	WB R	27.1	C																
	L	36.3	D			44.7	D												
	NB T/R	45.3	D																
	L	44.4	D																
Mitigations at Braddock Road and Gum Spring Road:	SB T	30.7	C			36.3	D												
	R	11.4	B																
	L	19.6	B																
	T	37.2	D			32.8	C												
Add a left turn lane	R	19.3	B																
	L	27.1	C																
	WB T	25.8	C			21.0	C												
	R	14.1	B																
Add a left turn lane	L	29.8	C			36.2	D												
	T/R	36.6	D																
	L	24.8	C																
	SB T	23.6	C			23.8	C												
Braddock Road and Goshen Road (Unsignalized)	R	19.1	B																
	L/T	0.6	A																
	WB T/R	0.0	A																
	SB L/R	9.4	A			9.4	A												
Braddock Road and North Star Blvd. (Unsignalized)	EB L/T	1.0	A																
	WB T/R	0.0	A																
	L	11.9	B			11.9	B												
	SB L/R																		



### Site Access

The following two access points will serve the proposed High School:

1. A full access driveway (from Road A)\* along Relocated Rt.659, and
2. A full access driveway (from Road B) along Relocated Rt.659

With the proposed School development in place, the existing section of Goshen Road between Braddock Road to Road A just north of the High School building on the school property will be abandoned. The planned construction of Relocated Route 659 will replace this section of Goshen Road and provide a safer north south access.

*\*Note: Site Driveway (Road A) would primarily provide access to the school bus and staff traffic only.*

### Site Generated Volumes

In order to calculate the trips generated by the proposed development, ITE's Trip Generation, 8<sup>th</sup> Edition was used to determine the trips into and out of the study site for the weekday morning and afternoon peak hours. **Table 4A** shows the trip generation calculations for the build out year of the high school, 2012.

**Table 4A: Trip Generation (Peak Hour of Generator – HS School Peak)**

Land Use	ITE Code	Size	----- Week day -----							
			AM Peak Hour			PM Peak Hour			Daily Total	
			In	Out	Total	In	Out	Total		
High School	530	1800	Students	515	241	756	173	349	522	2,784
TOTAL				515	241	756	173	349	522	2,784

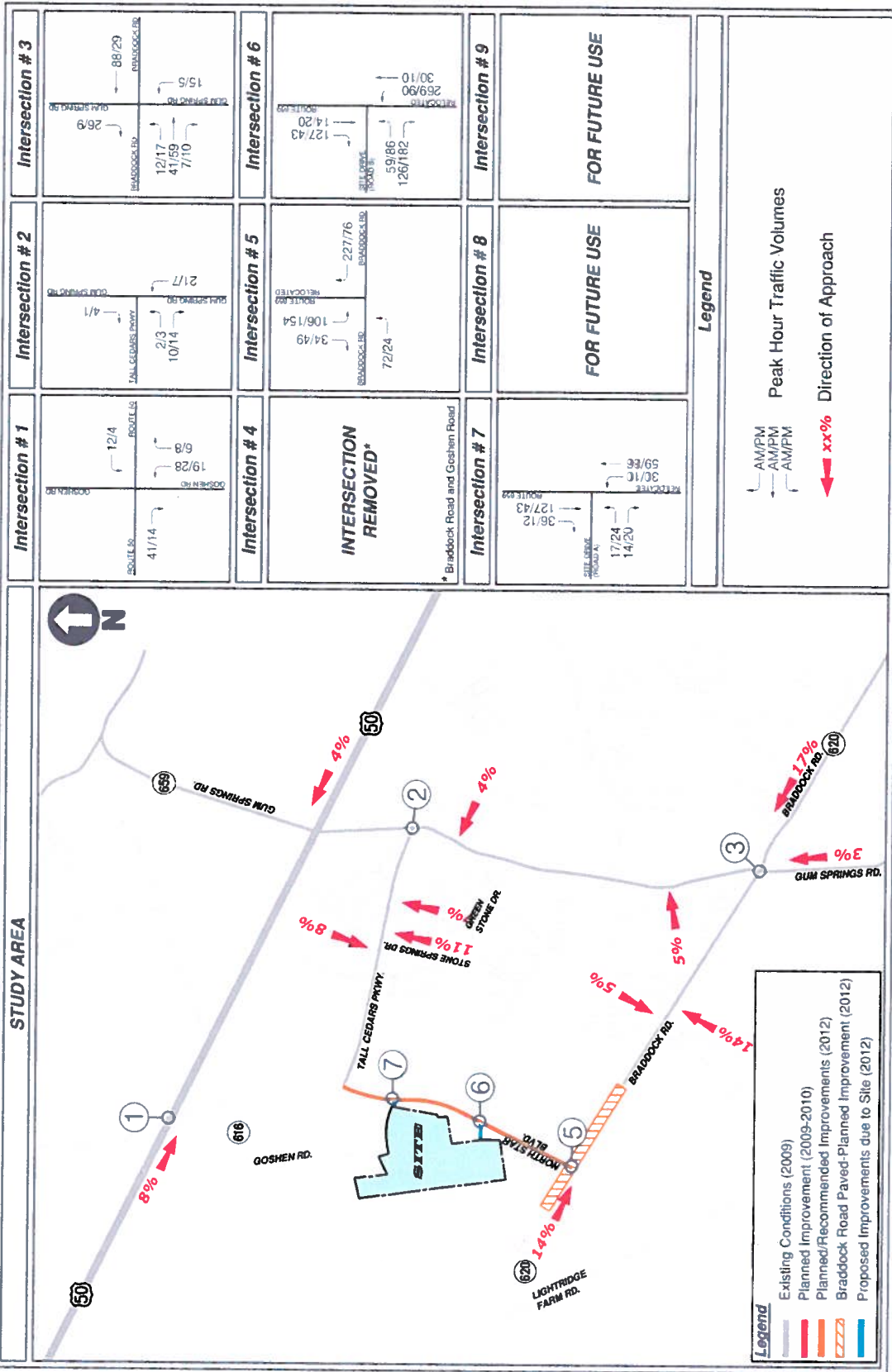
*\*Note: For the AM and PM School peak hours, the peak hour of generator was utilized for trip generation and capacity analysis purposes. The trip generation rates were agreed upon at the scoping meeting held with the County and VDOT officials and is reported in the scoping document. The proposed high school is anticipated to run on the following schedule: 9:00 AM to 3:48 PM.*

A trip generation comparison of the approved and proposed use is shown in **Table 4B** below:

**Table 4B: Trip Generation Comparison (Approved Vs Proposed)**

Land Use	ITE Code	Size	----- Week day -----						Daily Total	
			AM Peak Hour			PM Peak Hour				
			In	Out	Total	In	Out	Total		
Approved Use										
SF Detached Housing	210	31	Units	8	24	32	24	13	37	354
Proposed Use										
High School	530	1800	Students	515	241	756	173	349	522	2,784
Difference (Proposed – Approved)				507	217	724	149	336	485	2,430

Table 4B shows that the proposed High School will generate approximately 724 new trips in the

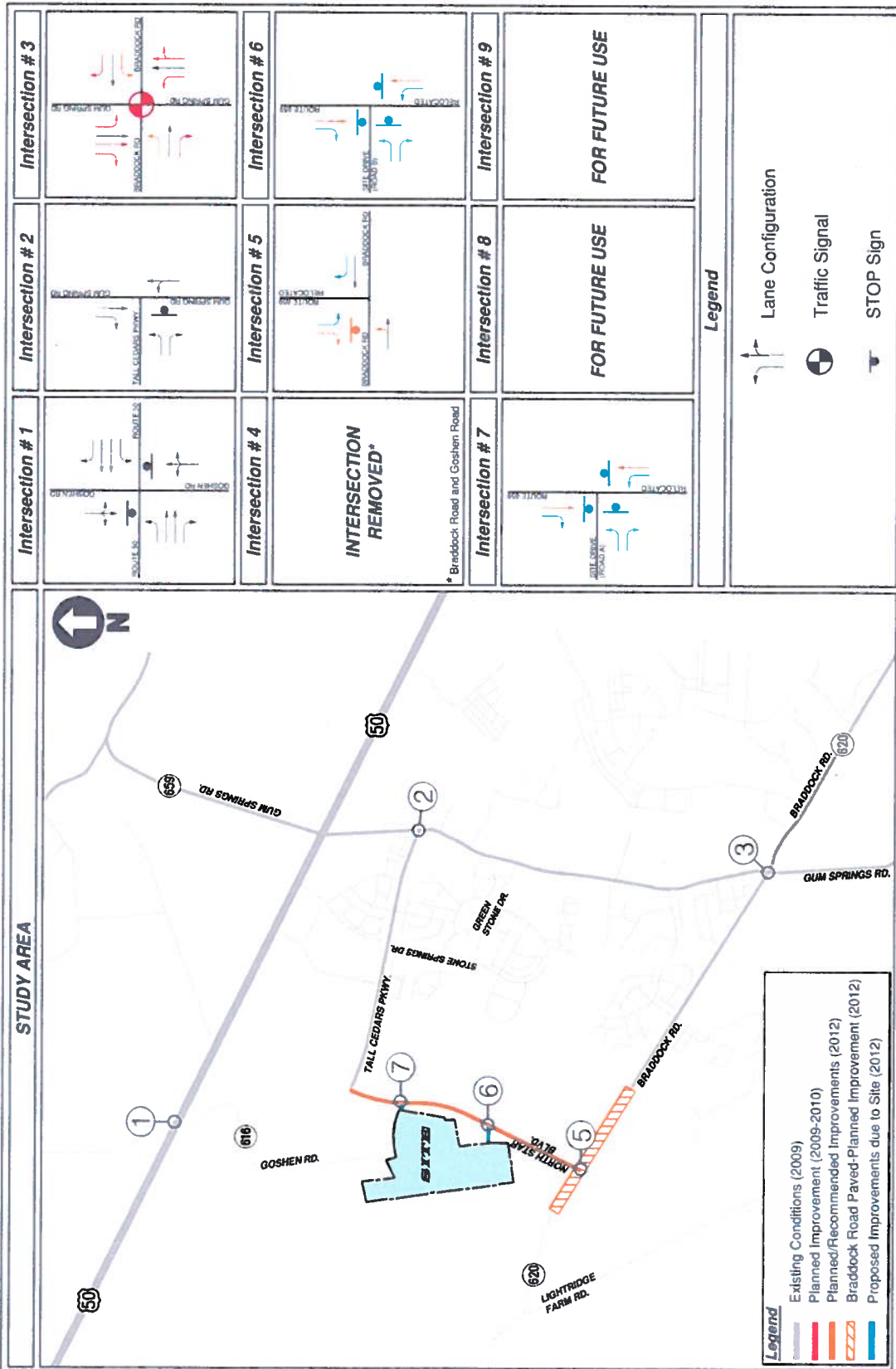


**Figure 13**  
 Site Generated Traffic Volumes and Direction of Approach (2012)  
 High School Peak Hour (8:00 AM to 9:00 AM and 3:30 PM to 4:30 PM)  
 Alternative 3: Board Adopted Service Plan





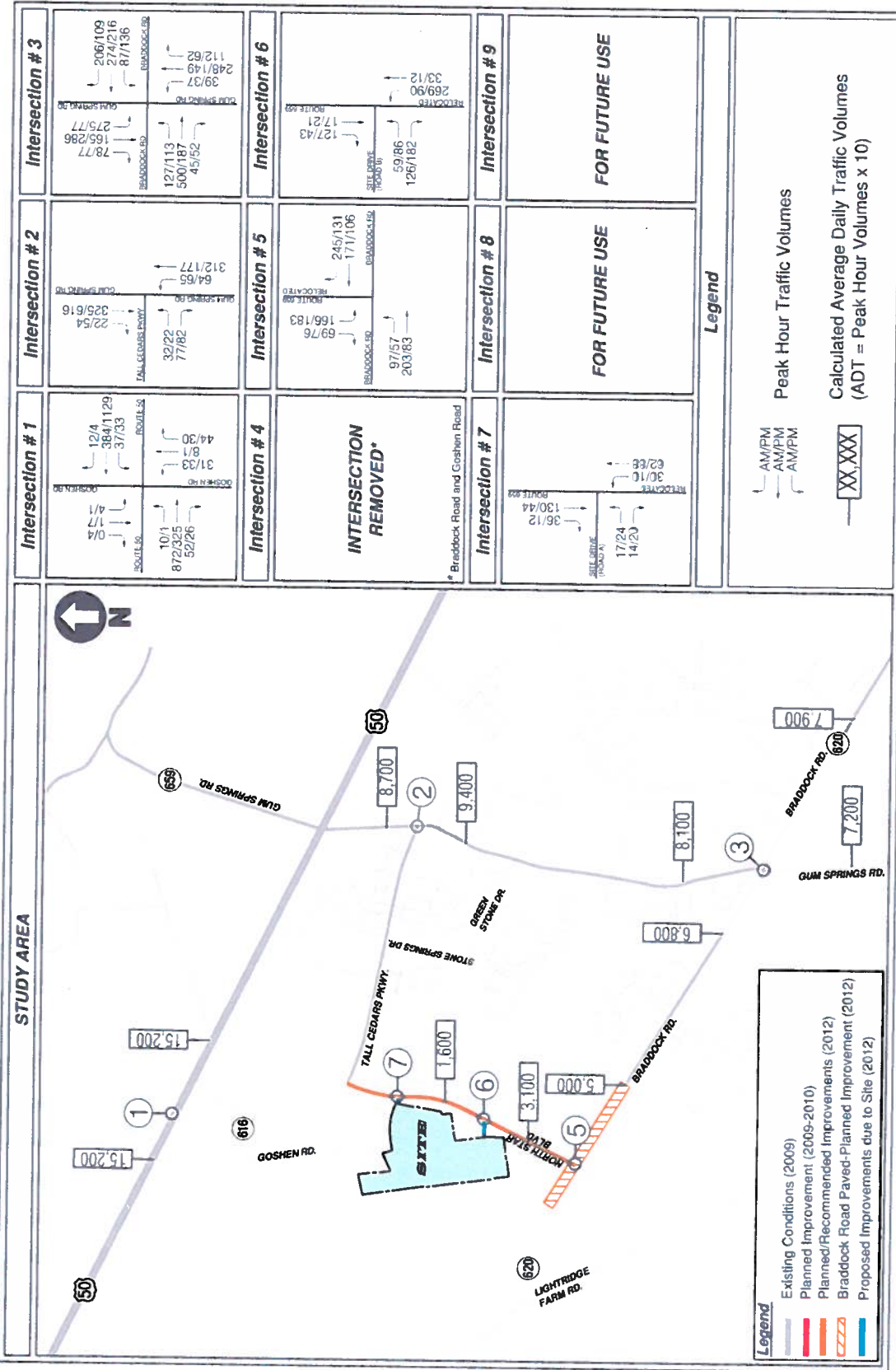
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**Figure 20**  
Future with Development Recommended Improvements (2012)



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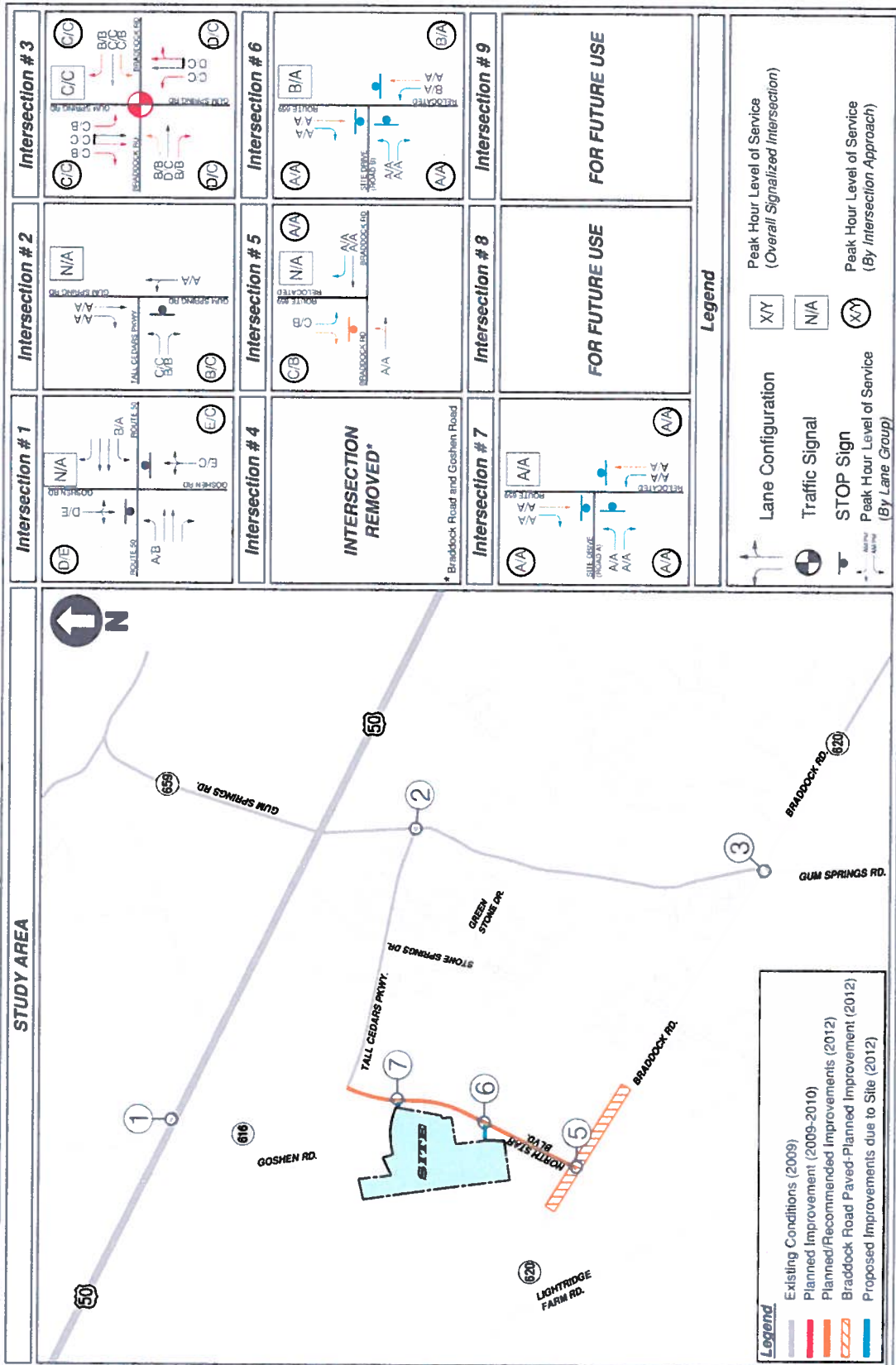
**Figure 16**  
Future Conditions with Development Traffic Volumes (2012)  
High School Peak Hour (8:00 AM to 9:00 AM and 3:30 PM to 4:30 PM)  
Alternative 3: Board Adopted Service Plan





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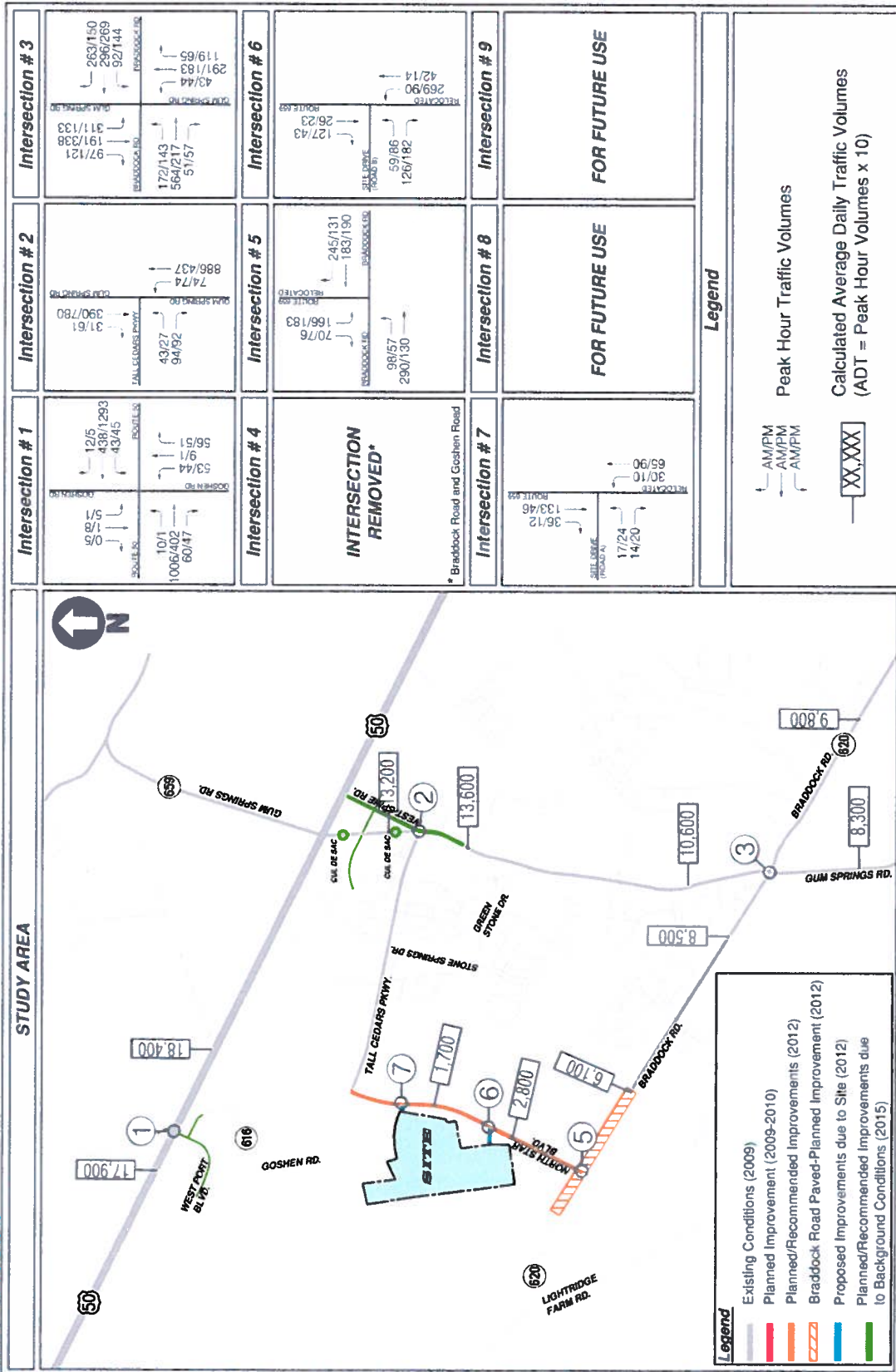
**Figure 19**  
Future Conditions with Development Levels of Service (2012)  
High School Peak Hour (8:00 AM to 9:00 AM and 3:30 PM to 4:30 PM)  
Alternative 3: Board Adopted Service Plan

Table 6C: Future Conditions with Development (2012) Intersection Capacity Analysis-(Alternative 3)-Board Adopted Service Plan  
Total Future Condition (2012) - HS Peak Hour-Board Adopted Service Plan

Intersection	Movement	AM PEAK HOUR						PM PEAK HOUR					
		Movement/Lane Group			Approach			Movement/Lane Group			Approach		
		Delay (sec / veh)	LOS		Delay (sec / veh)	LOS		Delay (sec / veh)	LOS		Delay (sec / veh)	LOS	
US Route 50 and Goshen Road (Unsignalized)	EB L	8.2	A					11.4	B				
	WB L	10.7	B					8.2	A				
	NB L/T/R	36.7	E		36.7	E		24.8	C		24.8	C	
	SB L/T/R	32.0	D		32.0	D		38.5	E		38.5	E	
Tail Cedars Parkway and Gum Spring Road (Unsignalized)	EB L	17.8	C					21.6	C				
	WB R	10.9	B		12.9	B		14.8	B		16.2	C	
	NB L/T	1.9	A					3.1	A				
	SB T	0.0	A					0.0	A				
Braddock Road and Gum Spring Road (Signalized)	EB R	0.0	A					0.0	A				
	WB T	19.9	B					17.2	B				
	NB R	39.1	D		34.1	D		26.7	C		22.6	C	
	SB R	19.0	B					19.8	B				
	EB L	29.1	C					17.1	B				
	WB T	27.0	C		22.6	C		28.2	C		22.2	C	
	NB R	13.9	B					16.7	B				
	SB L	31.6	C					22.7	C				
	EB T/R	38.4	D		37.7	D		26.2	C		25.7	C	
	WB L	27.0	C					16.9	B				
	NB T	24.8	C					23.4	C				
	SB R	20.3	C		25.3	C		15.0	B		20.8	C	
Intersection Closed													
Intersection Closed													
Intersection Closed													
Braddock Road and Goshen Road	EB L/T	3.4	A					3.4	A				
	WB T/R	0.0	A					0.0	A				
	SB L/R	27.9	D		27.9	D		15.3	C		15.3	C	
Mitigations at Braddock Road and North Star Boulevard:													
Add a right turn lane	EB L/T	3.4	A					3.4	A				
	WB R	0.0	A		0.0	A		0.0	A		0.0	A	
	SB L	17.3	C					12.2	B				
Mitigations at Road A and North Star Boulevard (Unsignalized):													
Add a left turn lane	EB L	8.5	A					9.3	A				
	WB R	6.8	A		7.7	A		7.7	A		8.6	A	
	NB T	8.4	A		7.5	A		7.7	A		7.3	A	
Add a right turn lane	EB T	7.0	A					7.2	A				
	WB R	7.6	A		7.5	A		6.9	A		7.0	A	
	SB R	7.2	A					7.2	A				
Mitigations at Road B and North Star Boulevard (Unsignalized):													
Add a left turn lane	EB L	8.8	A					8.2	A				
	WB R	8.1	A		8.8	A		7.5	A		7.7	A	
	NB T	12.5	B		12.0	B		8.7	A		8.6	A	
Add a right turn lane	EB T	8.3	A					7.7	A				
	WB R	7.7	A		7.6	A		8.9	A		7.5	A	
	SB R	7.6	A					6.8	A				



**Figure 34**  
Future without Development Recommended Improvements (2015)



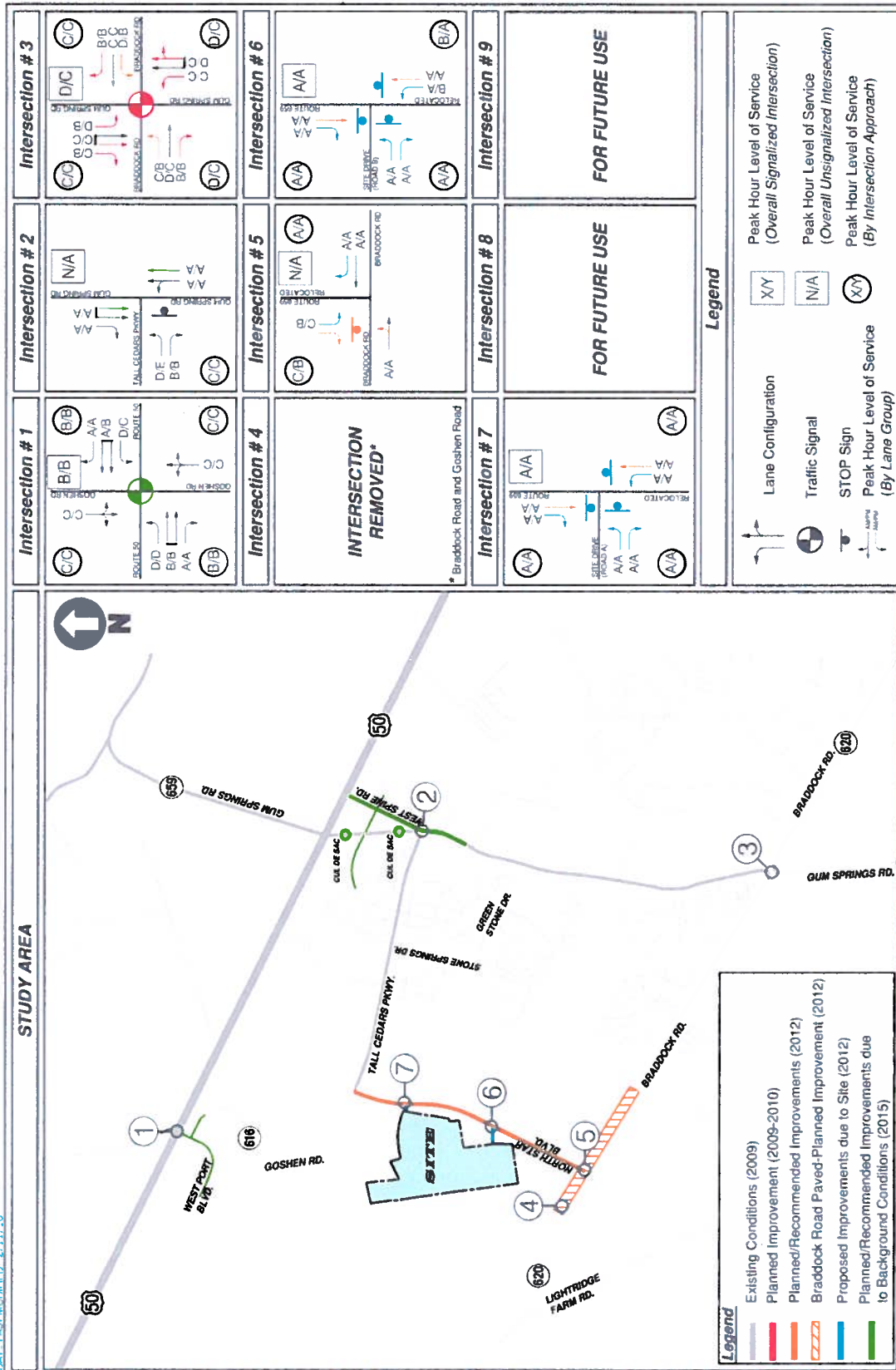
**Figure 24**  
Future without Development Traffic Volumes (2015)  
High School Peak Hours (8:00 AM to 9:00 AM and 3:30 PM to 4:30 PM)  
Alternative 3: Board Adopted Service Plan





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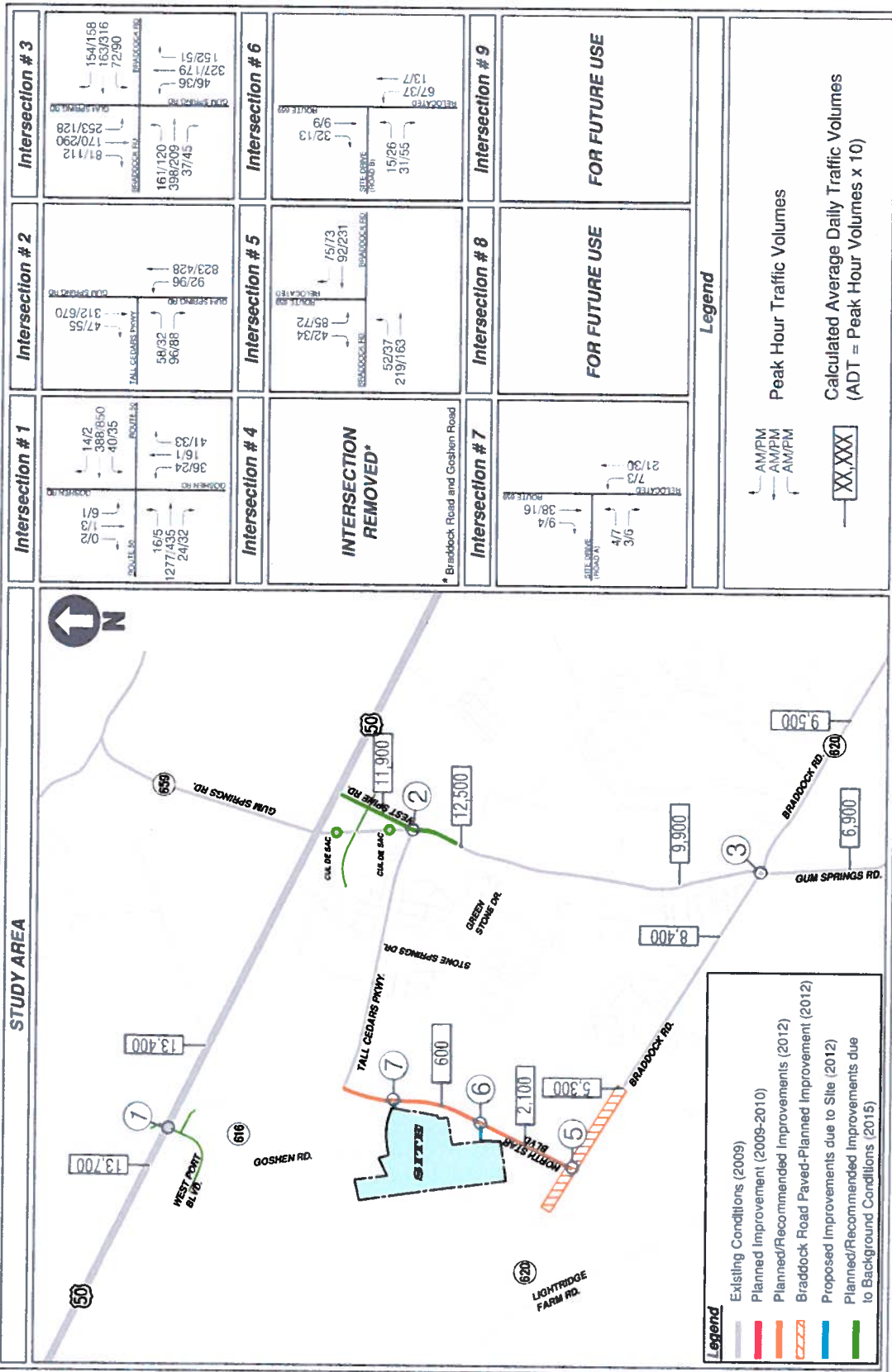
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**Figure 30**  
Future without Development Levels of Service (2015)  
High School Peak Hour (8:00 AM to 9:00 AM and 3:30 PM to 4:30 PM)  
Alternative 3: Board Adopted Service Plan

Table 7C: Future Conditions without Development (2015) Intersection Capacity Analysis, HS Peak Alternative 3 Board Adopted Service Plan

Future Background Condition (2018)-HS Peak Hour-Board Adopted Service Plan													
Intersection	Movement	AM PEAK HOUR						PM PEAK HOUR					
		Movement/Lane Group			Approach			Movement/Lane Group			Approach		
		Delay (sec / veh)	LOS		Delay (sec / veh)	LOS		Delay (sec / veh)	LOS		Delay (sec / veh)	LOS	
Mitigations at Route 50 and Goshen Road: Add a Signal (Warranted)													
	EB L	51.9	D		15.3	B		36.4	D		10.7	B	
	EB T	15.3	B					10.8	B				
	EB R	9.5	A					9.4	A				
	WB L	37.7	D					34.2	C				
	WB T	9.1	A		11.6	B		15.7	B		16.3	B	
	WB R	7.7	A					7.3	A				
	NB L/T/R	30.3	C		30.3	C		28.6	C		28.6	C	
	SB L/T/R	26.9	C		26.9	C		26.2	C		26.2	C	
Mitigations at Tall Cedars Parkway and Gum Spring Road (Unsignalized):													
	EB L	28.1	D		15.8	C		35.4	E		17.7	C	
	EB R	10.2	B					12.5	B				
	NB L/T	2.3	A					4.2	A				
	NB T	0.0	A					0.0	A				
	SB L	0.0	A					0.0	A				
	SB R	0.0	A					0.0	A				
	EB L	24.1	C					17.2	B				
	EB T	50.1	D		42.4	D		26.6	C		22.5	C	
Braddock Road and Gum Spring Road (Signalized)	EB R	19.8	B					19.9	B				
	L	38.5	D					17.9	B				
	WB T	27.4	C		23.7	C		31.8	C		24.4	C	
	R	14.5	B					17.4	B				
	L	34.2	C					17.4	B				
	T/R	43.6	D		42.7	D		24.9	C		28.2	C	
	L	41.4	D					28.8	C				
	SB T	26.8	C		33.6	C		19.1	B		22.0	C	
	R	22.2	C					25.5	C				
								15.7	B				
Intersection Closed													
Braddock Road and Goshen Road													
Braddock Road and North Star Blvd. (Unsignalized)	EB L/T	3.0	A					8.1	A				
	WB L	0.0	A		0.0	A		0.0	A		0.0	A	
	WB T	0.0	A					0.0	A				
	SB L	20.7	C		20.7	C		14.2	B		14.2	B	
Road A and North Start Boulevard (Unsignalized)	EB L	8.0	A		7.3	A		7.9	A		7.3	A	
	EB R	6.5	A					6.6	A				
	NB L	7.6	A		7.2	A		7.3	A		7.2	A	
	NB T	7.1	A					7.2	A				
	SB L	7.6	A		7.3	A		6.9	A		6.8	A	
	SB R	6.3	A					6.2	A				
	EB L	8.9	A		8.4	A		8.2	A		7.7	A	
	EB R	8.1	A					7.5	A				
Road B and North Start Boulevard (Unsignalized)	NB L	12.5	B		11.9	B		8.7	A		8.5	A	
	NB T	7.6	A					7.4	A				
	SB L	7.6	A		7.6	A		7.8	A		7.1	A	
	SB R	7.6	A					6.8	A				



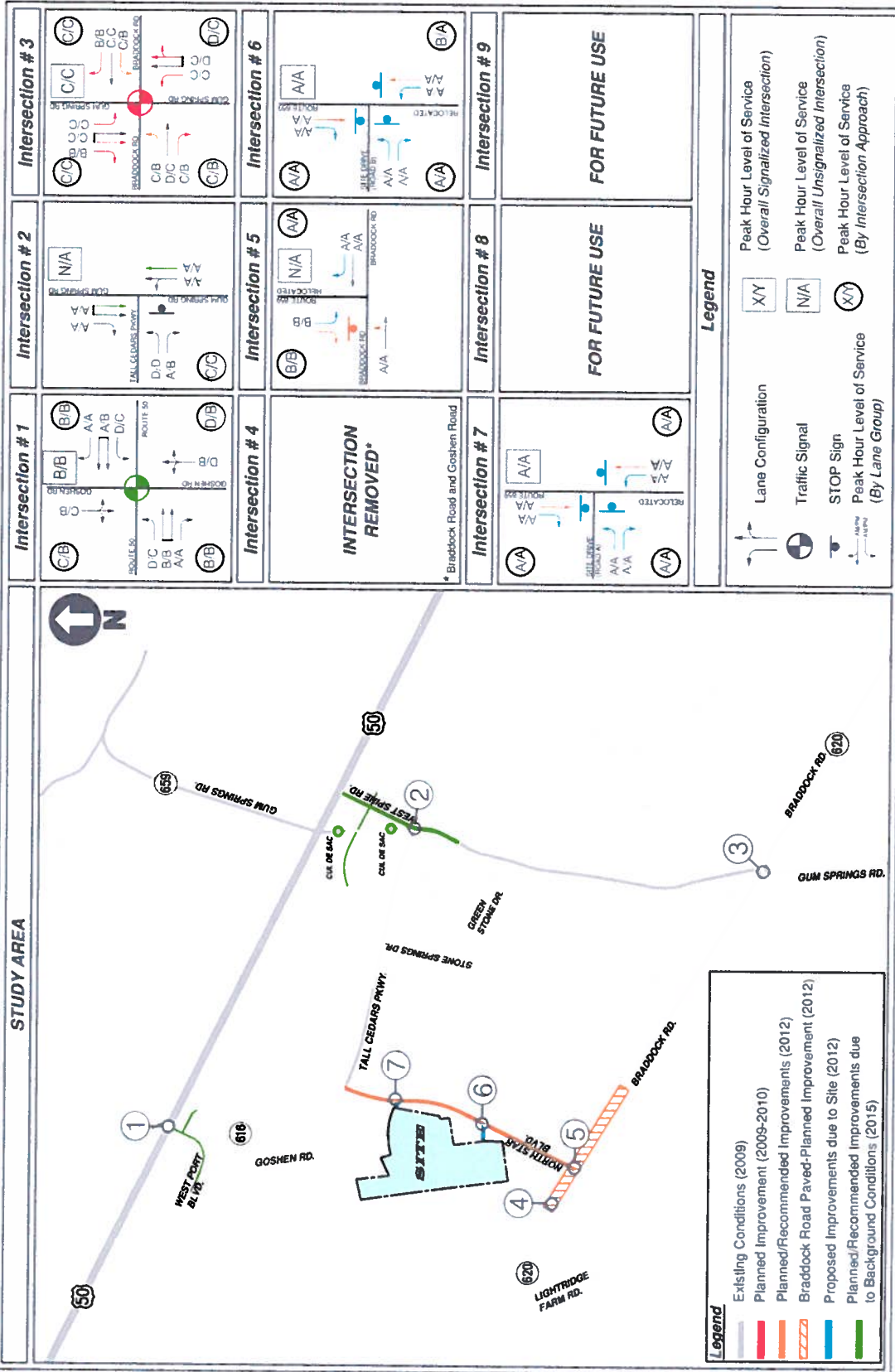
**Figure 27**  
Future without Development Traffic Volumes (2015)  
Elementary School Peak Hour (7:00 AM to 8:00 AM and 2:15 PM to 3:15 PM)  
Alternative 3: Board Adopted Service Plan





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**Figure 33**  
Future without Development Levels of Service (2015)  
Elementary School Peak Hour (7:00 AM to 8:00 AM and 2:15 PM to 3:15 PM)  
Alternative 3: Board Adopted Service Plan

Table 7F: Future Conditions without Development (2015) Intersection Capacity Analysis, ES Peak Alternative 3 Board Adopted Service Plan													
Future Background Condition (2016)-ES Peak Hour-Board Adopted Service Plan													
Intersection	Movement	AM PEAK HOUR				PM PEAK HOUR							
		Movement/Lane Group		Approach		Movement/Lane Group		Approach					
		Delay (sec / veh)	LOS	Delay (sec / veh)	LOS	Delay (sec / veh)	LOS	Delay (sec / veh)	LOS				
Mitigations at Route 50 and Goshen Road: Add a Signal (Warranted)													
	EB	L	47.5	D		17.1	B		27.4	C		11.1	B
		R	16.9	B					11.1	B			
		R	8.5	A					9.4	A			
	WB	L	41.4	D					27.1	C			
		T	7.9	A		10.9	B		13.1	B		13.7	B
		R	6.8	A					8.3	A			
Realign Northbound Approach	NB	L/T/R	37.6	D		37.6	D		19.4	B		19.4	B
	SB	L/T/R	34.3	C		34.3	C		18.6	B		18.6	B
Mitigations at Tall Cedars Parkway and Gum Spring Road (Unsignalized):													
Add 2nd through lane	EB	L	27.2	D		16.4	C		28.6	D		16.2	C
		R	9.9	A					11.7	B			
	NB	L/T	2.7	A					3.6	A			
		T	0.0	A					0.0	A			
		T	0.0	A					0.0	A			
		R	0.0	A					0.0	A			
Add 2nd through lane	L	22.1	C					15.0	B				
	EB	T	35.8	D		31.2	C		22.0	C		19.1	B
		R	20.6	C					17.0	B			
	L	24.8	C					18.0	B				
	WB	T	27.0	C		22.0	C		30.3	C		24.4	C
		R	15.5	B					16.4	B			
Braddock Road and Gum Spring Road (Signalized)	NB	L	27.8	C		35.9	D		26.4	C		30.0	C
		T/R	36.7	D					30.6	C			
	L	23.7	C					20.8	C				
	SB	T	21.9	C		22.1	C		26.9	C		23.4	C
		R	17.7	B					17.5	B			
Intersection Closed													
Intersection Closed													
Braddock Road and Goshen Road	EB	L/T	1.8	A					1.7	A			
		T	0.0	A					0.0	A			
		R	0.0	A		0.0	A		0.0	A			
Braddock Road and North Star Blvd. (Unsignalized)	L	11.7	B					12.3	B				
	SB	R				11.7	B				12.3	B	
Road A and North Start Boulevard (Unsignalized)	EB	L	8.3	A		7.5	A		8.7	A		8.2	A
		R	6.4	A					7.5	A			
	NB	L	8.1	A		6.9	A		7.5	A		6.7	A
		T	6.5	A					6.8	A			
		T	6.6	A					6.5	A			
		R	7.1	A		6.7	A		6.5	A		6.5	A
Road B and North Start Boulevard (Unsignalized)	L	7.3	A					7.2	A				
	EB	R	6.1	A		6.5	A		6.1	A		6.4	A
	NB	L	7.6	A		7.5	B		7.3	A		7.2	A
		T	7.2	A					6.8	A			
		T	6.7	A		6.2	A		6.7	A		6.2	A
		R	6.0	A					5.9	A			



### Site Access

The following two access points will serve the proposed High School:

3. A full access driveway (from Road A)\* along Relocated Rt.659, and
4. A full access driveway (from Road B) along Relocated Rt.659

\*Note: Site Driveway (Road A) would primarily provide access to the school bus and staff traffic only.

### Study Time Periods

Since the operating hours of both the Elementary School and High School are not the same, two sets of peak hours were analyzed-High School Peak Hour and Elementary School Peak Hour, as shown in Table 8 below:

**Table 8: Study Time Periods**

School	Operating Hours	AM School Peak	PM School Peak
Elementary School	7:50 AM - 2:35 PM	7:00 - 8:00 AM	2:15 - 3:15 PM
High School	9:00 AM - 3:48 PM	8:00 - 9:00 AM	3:30 - 4:30 PM

### Site Generated Volumes

In order to calculate the trips generated by the proposed development, ITE's Trip Generation, 8<sup>th</sup> Edition was used to determine the trips into and out of the study site for the weekday morning and afternoon peak hours. Table 9A shows the trip generation calculations.

**Table 9A: Trip Generation (Peak Hour of Generator)**

Land Use	ITE Code	Size	----- Week day -----						
			AM Peak Hour			PM Peak Hour			Daily Total
			In	Out	Total	In	Out	Total	
Elementary School	520	875 Students	194	158	352	107	130	237	1,129
High School	530	1800 Students	515	241	756	173	349	522	2,784
OVERALL TOTAL			709	399	1,108	280	479	759	3,913

As mentioned earlier and shown in Table 8, the High School and Elementary School will have separate schedules. However, based on the opening and closing times, some traffic for the two schools will overlap. Gorove Slade Associates has collected actual field data for a significant number of schools for Loudoun County Public Schools. Based on the actual field data, the High School Peak Hour trip generation was evaluated using the following field observations:

- There will be NO overlap of Elementary School traffic with the High School traffic during the High School AM peak hour of 8:00 AM to 9:00 AM, as the Elementary School start time is 7:50 AM
- There will be an overlap of Elementary School traffic with the High School traffic during the High School PM peak hour of 3:30 PM to 4:30 PM



- The PM peak hour overlap of Elementary School traffic with High School traffic, based on the actual field data is approximately 30%
- **Table 9B** on the next page shows the trips that would be generated during the High School Peak Hour.
- **Figures 35A, 36A and 37A** show the trips generated by the High School during the High School Peak Hour under the three alternatives respectively.
- **Figures 35B, 36B and 37B** show the trips generated by the Elementary School during the High School Peak Hour.
- **Figures 35C, 36C and 37C** show the total future with development (2015) High School Peak Hour trips under the three alternatives respectively.

**Table 9B: Trip Generation (High School Peak Hours)**

Land Use	ITE Code	Size	----- Week day -----						
			AM Peak Hour			PM Peak Hour			Daily Total
			In	Out	Total	In	Out	Total	
High School	530	1800 Students	515	241	756	173	349	522	2,784
Elementary School	Overlap	30% Students	0	0	0	32	39	71	1,129
<b>OVERALL TOTAL</b>			<b>515</b>	<b>241</b>	<b>756</b>	<b>205</b>	<b>388</b>	<b>593</b>	<b>3,913</b>

Based on the actual field data, the Elementary School Peak Hour trip generation was evaluated using the following field observations:

- There will be an overlap of High School traffic with the Elementary School traffic during the Elementary School AM peak hour of 7:00 AM to 8:00 AM. The High School start time is 9:00 AM, however there is some High School traffic which arrives prior to the High School peak hour of 8:00 AM to 9:00 AM
- The AM peak hour overlap of High School traffic with Elementary School traffic, based on the actual field data is approximately 25%
- There will be an overlap of High School traffic with the Elementary School traffic during the Elementary School PM peak hour of 2:15 PM to 3:15 PM
- The PM peak hour overlap of High School traffic with Elementary School traffic, based on the actual field data is approximately 30%
- **Table 9C** on the next page shows the trips that would be generated during the Elementary School Peak Hour.
- **Figures 38A, 39A and 40A** show the trips generated by the Elementary School during the Elementary School Peak Hour.
- **Figures 38B, 39B and 40B** show the trips generated by the High School during the



Elementary School Peak Hour under the three alternatives respectively.

- **Figures 38C, 39C and 40C** show the total future with development (2015) Elementary School Peak Hour trips under the three alternatives respectively.

**Table 9C: Trip Generation (Elementary School Peak Hour)**

Land Use	ITE Code	Size	----- Week day -----							
			AM Peak Hour			PM Peak Hour			Daily Total	
			In	Out	Total	In	Out	Total		
Elementary School	520	875	Students	194	158	352	107	130	237	1,129
High School	Overlap	25%/30%	Students	129	60	189	52	105	157	2,784
OVERALL TOTAL				323	218	541	159	235	394	3,913

Table 9B shows that the proposed schools will generate approximately 756 new trips in the weekday morning high school peak hour and approximately 593 new trips in the weekday afternoon high school peak hour.

Table 9C shows that the proposed schools will generate approximately 541 new trips in the weekday morning elementary school peak hour and approximately 394 new trips in the weekday afternoon elementary school peak hour. A trip generation comparison of the approved and proposed use is shown in **Table 9D** on the next page.

**Table 9D: Trip Generation Comparison (Approved Vs Proposed)**

Land Use	ITE Code	Size	----- Week day -----							
			AM Peak Hour			PM Peak Hour			Daily Total	
			In	Out	Total	In	Out	Total		
Approved Use										
SF Detached Housing	210	31	Units	8	24	32	24	13	37	354
Proposed Use										
Elementary School	520	875	Students	194	158	352	107	130	237	1,129
High School	530	1800	Students	515	241	756	173	349	522	2,784
Total Proposed				709	399	1,108	280	479	759	3,913
Difference (Proposed – Approved)				701	375	1,076	256	466	722	3,559

### ***Direction of Approach and Future Conditions with Development (2015) Volumes***

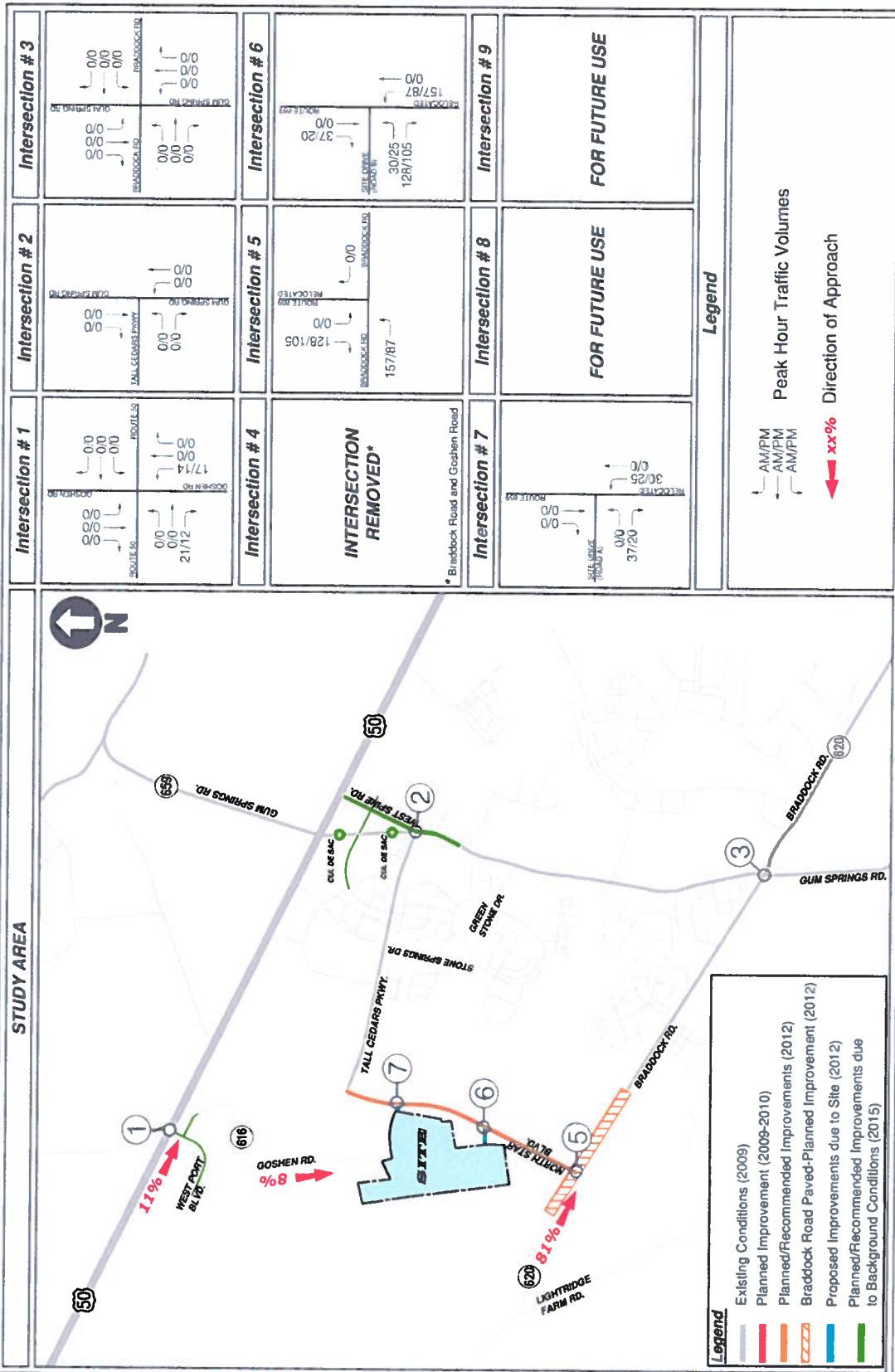
The direction of approach for the proposed trips was evaluated based on the catchment area data provided by the Loudoun County Public Schools Planning Department. The catchment area data was divided into land bay zones in the vicinity of the proposed schools, and number of students assigned to each land bay zone was provided. Based on this information, the direction of approach for the proposed Elementary School traffic was evaluated. The detailed calculations involved in compiling the direction of approach are provided in Appendix H.





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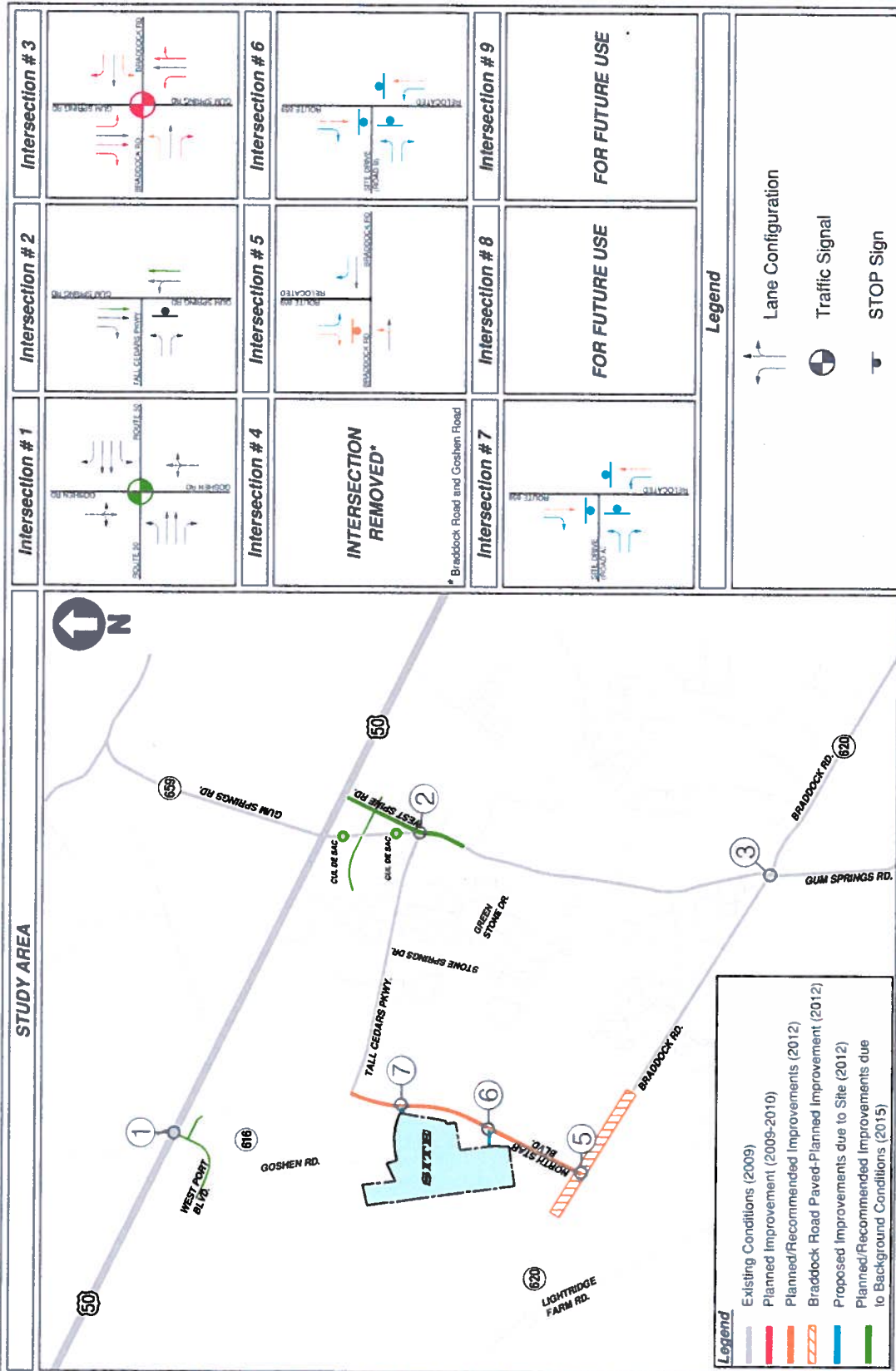
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**Figure 38A**  
Site Generated Traffic Volumes and Direction of Approach (2015)-Elementary School  
Elementary School Peak Hours  
(7:00 AM to 8:00 AM and 2:15 PM to 3:15 PM)



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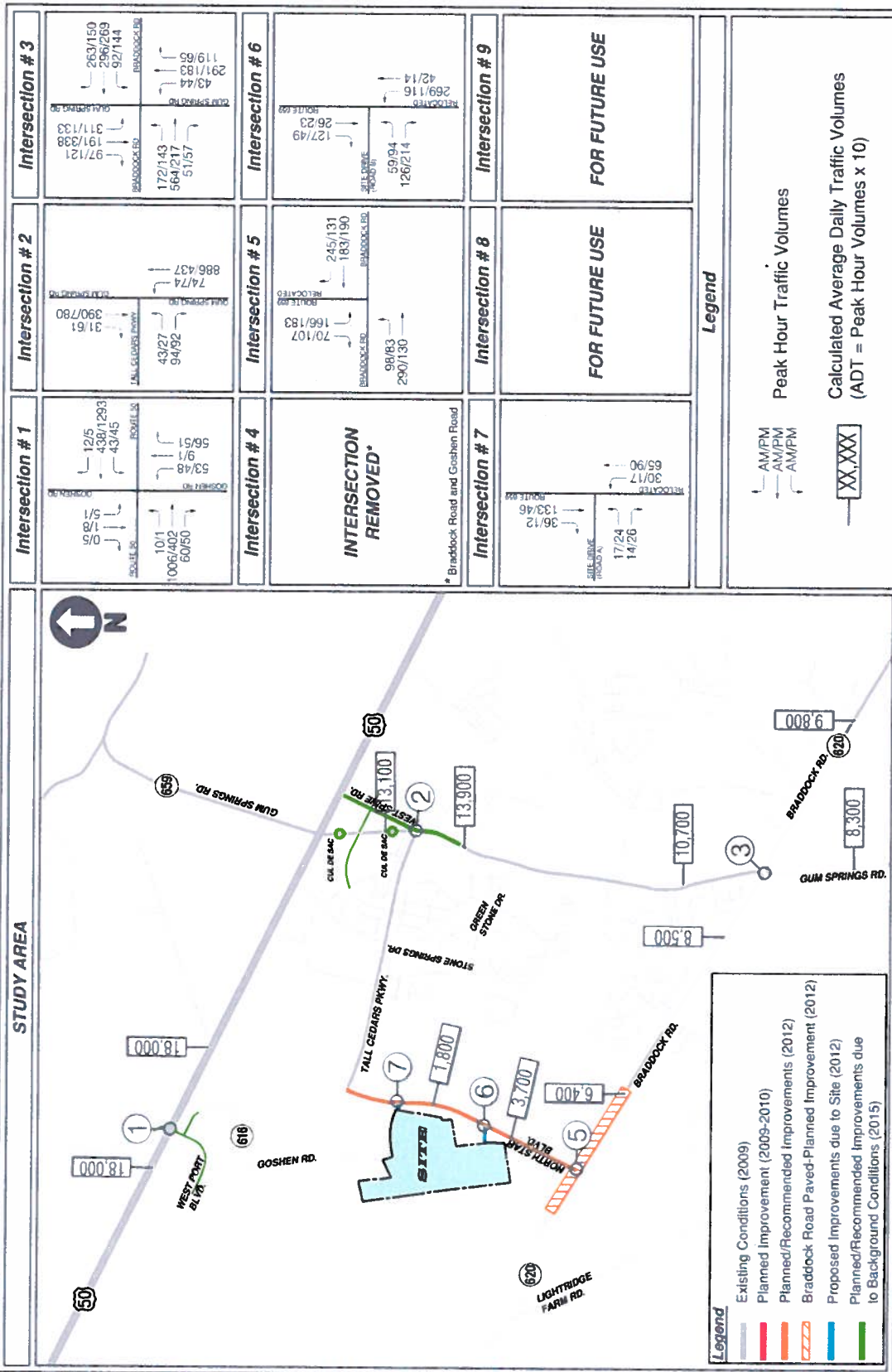


**Figure 47**  
 Future with Development Recommended Improvements (2015)



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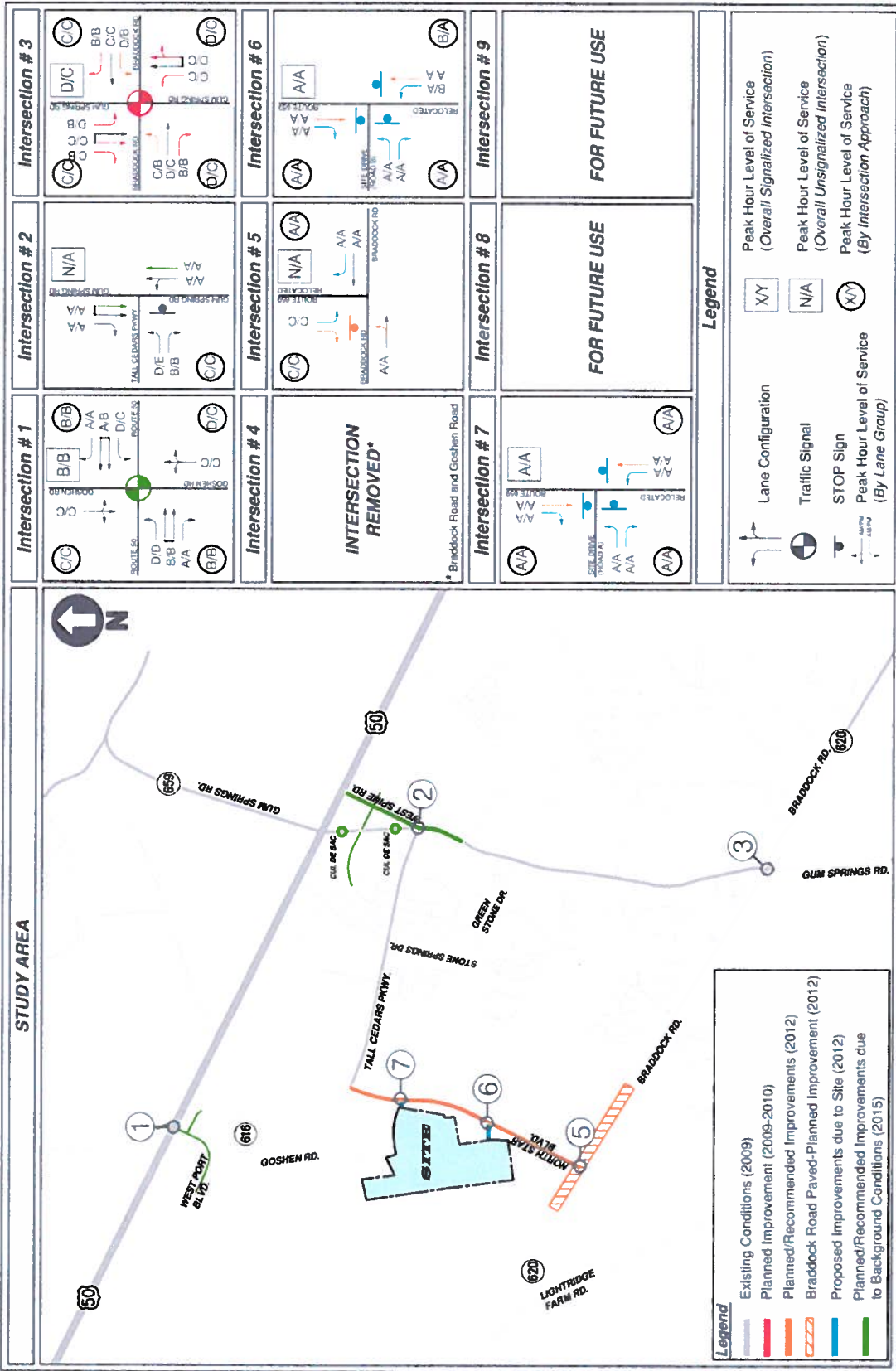


**Figure 37C**  
Future with Development Traffic Volumes (2015)  
High School Peak Hour (8:00 AM to 9:00 AM and 3:30 PM to 4:30 PM)  
Alternative 3: Board Adopted Service Plan



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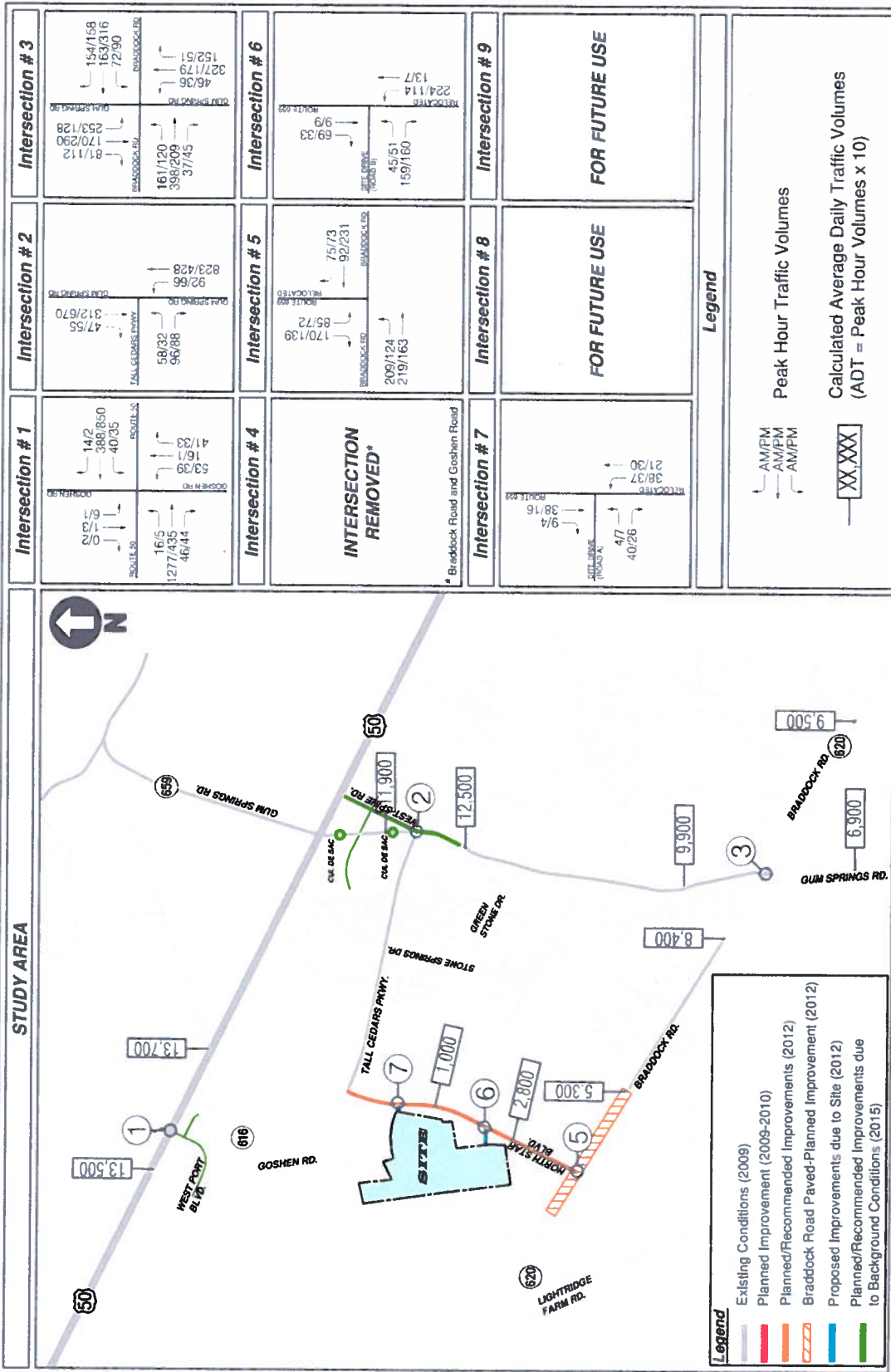
**Figure 43**  
Future with Development Levels of Service (2015)  
High School Peak Hour (8:00 AM to 9:00 AM and 3:30 PM to 4:30 PM)  
Alternative 3: Board Adopted Service Plan



Table 10C: Future Conditions with Development (2015) Intersection Capacity Analysis, HS Peak Alternative 3 Board Adopted Service Plan

Intersection	Movement	AM PEAK HOUR						PM PEAK HOUR					
		Approach			Intersection			Approach			Intersection		
		Movement/Lane Group	Delay (sec / veh)	LOS	Delay (sec / veh)	LOS	LOS	Movement/Lane Group	Delay (sec / veh)	LOS	Delay (sec / veh)	LOS	LOS
US Route 50 and Goshen Road (Signalized)	EB	L	52.0	D				D	37.1	D			
	T		15.4	B				B	11.0	B			
	R		9.6	A				A	9.6	A			
	WB	L	37.7	D				C	34.9	C			
	T		9.1	A				B	16.0	B			
	R		7.7	A				A	7.4	A			
	NB	L/T/R	30.4	C				C	29.1	C			
	SB	L/T/R	26.9	C				C	26.3	C			
	EB	L	28.1	D				E	35.0	E			
	R		10.2	B				B	12.5	B			
Tall Cedars Parkway and Gum Spring Road (Unsignalized)	NB	L/T	2.3	A				A	4.2	A			
	T		0.0	A				A	0.0	A			
	R		0.0	A				A	0.0	A			
	SB	L	0.0	A				A	0.0	A			
	T		0.0	A				A	0.0	A			
	R		0.0	A				A	0.0	A			
	EB	L	24.1	C				B	17.2	B			
	T		50.1	D				C	26.6	C			
	R		19.8	B				B	19.9	B			
	WB	L	38.5	D				C	17.9	C			
Braddock Road and Gum Spring Road (Signalized)	T		27.4	C				C	31.8	C			
	R		14.5	B				B	17.4	B			
	NB	L	34.2	C				C	24.9	C			
	T/R		43.6	D				C	28.8	C			
	L		41.4	D				B	19.1	B			
	SB	T	26.8	C				C	25.5	C			
	R		22.2	C				B	15.7	B			
	EB	L/T	3.0	A				A	3.6	A			
	T		0.0	A				A	0.0	A			
	R		0.0	A				A	0.0	A			
Braddock Road and North Star Blvd. (Unsignalized)	L		20.8	C				C	15.4	C			
	SB	R											
	EB	L	8.5	A				A	9.3	A			
	R		8.1	A				A	8.0	A			
	NB	L	8.4	A				A	7.7	A			
	T		7.1	A				A	7.3	A			
	SB	T	7.6	A				A	7.0	A			
	R		7.2	A				A	7.5	A			
	EB	L	8.9	A				A	8.5	A			
	R		8.1	A				A	8.0	A			
Road A and North Start Boulevard (Unsignalized)	NB	L	12.5	B				A	9.3	A			
	T		8.4	A				A	8.0	A			
	SB	T	7.9	A				A	9.4	A			
	R		7.7	A				A	7.0	A			
	EB	L	8.4	A				A	8.2	A			
	R		12.0	B				A	9.2	A			
	NB	L	12.0	B				A	9.2	A			
	T		7.7	A				A	7.8	A			
	SB	R						A	7.0	A			
	R		7.7	A				A	7.8	A			
Braddock Road and Goshen Road	EB	L/T	3.0	A				A	3.6	A			
	T		0.0	A				A	0.0	A			
	WB	R						A	0.0	A			
	L		20.8	C				C	15.4	C			
	SB	R											
	EB	L	8.5	A				A	9.3	A			
	R		8.1	A				A	8.0	A			
	NB	L	8.4	A				A	7.7	A			
	T		7.1	A				A	7.3	A			
	SB	T	7.6	A				A	7.0	A			
Road B and North Start Boulevard (Unsignalized)	R		7.2	A				A	7.5	A			
	EB	L	8.9	A				A	8.5	A			
	R		8.1	A				A	8.0	A			
	NB	L	12.5	B				A	9.3	A			
	T		8.4	A				A	8.0	A			
	SB	T	7.9	A				A	9.4	A			
	R		7.7	A				A	7.0	A			
	EB	L	8.4	A				A	8.2	A			
	R		12.0	B				A	9.2	A			
	NB	L	12.0	B				A	9.2	A			



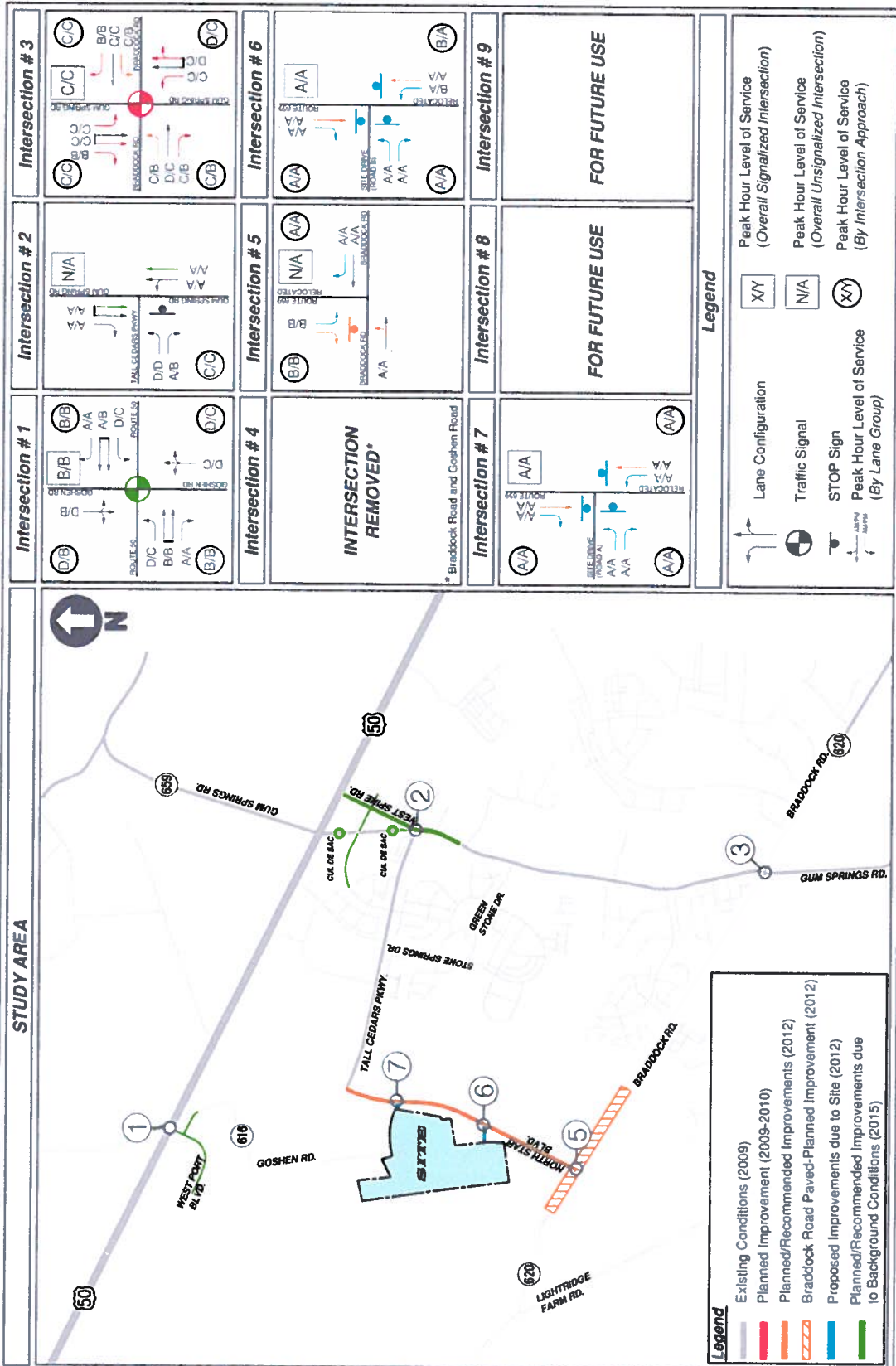


**Figure 40C**  
Future with Development Traffic Volumes (2015)  
Elementary School Peak Hour (7:00 AM to 8:00 AM and 2:15 PM to 3:15 PM)  
Alternative 3: Board Adopted Service Plan



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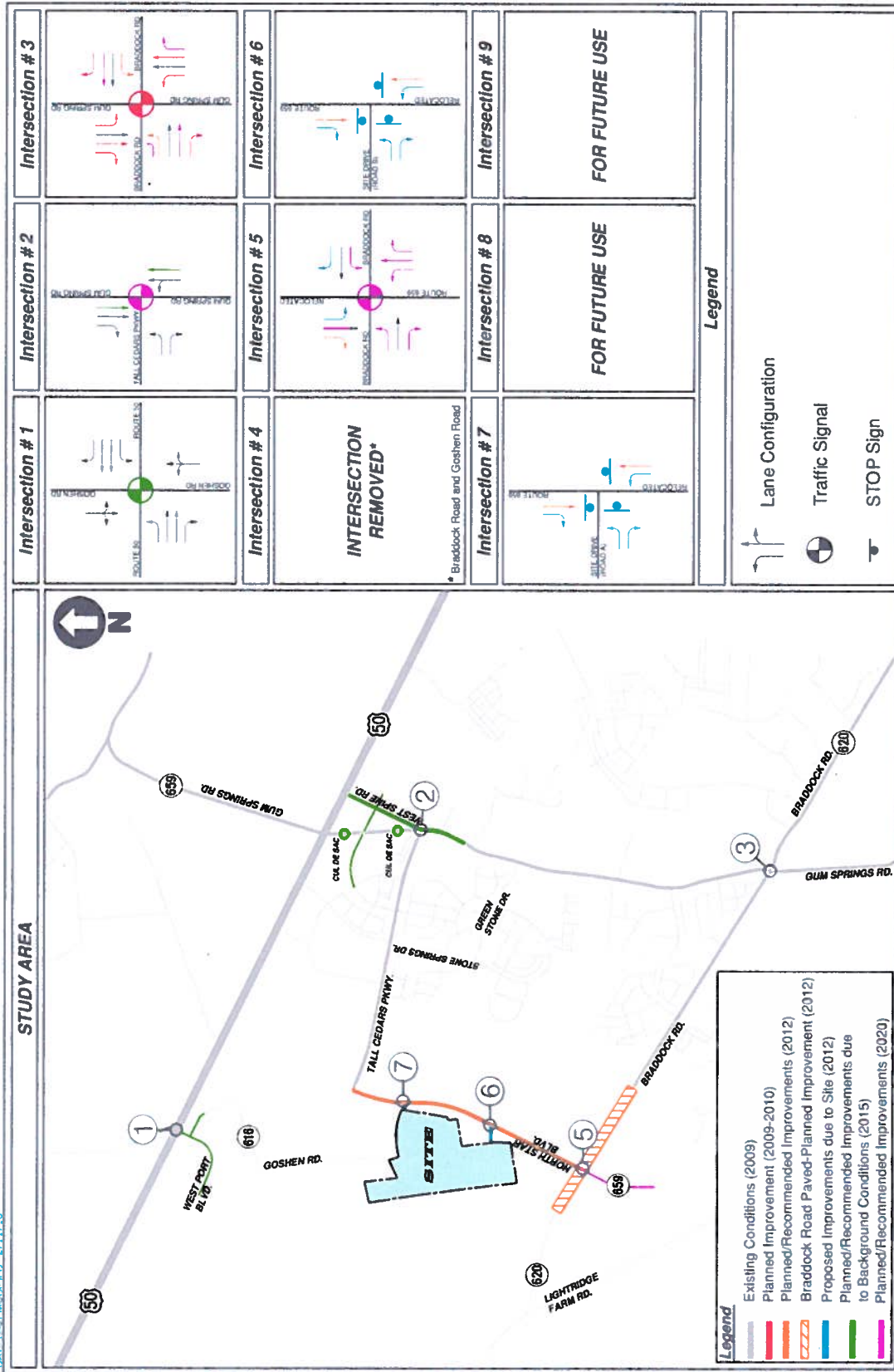
June 09, 2010



**Figure 46**  
Future with Development Levels of Service (2015)  
Elementary School Peak Hour (7:00 AM to 8:00 AM and 2:15 PM to 3:15 PM)  
Alternative 3: Board Adopted Service Plan

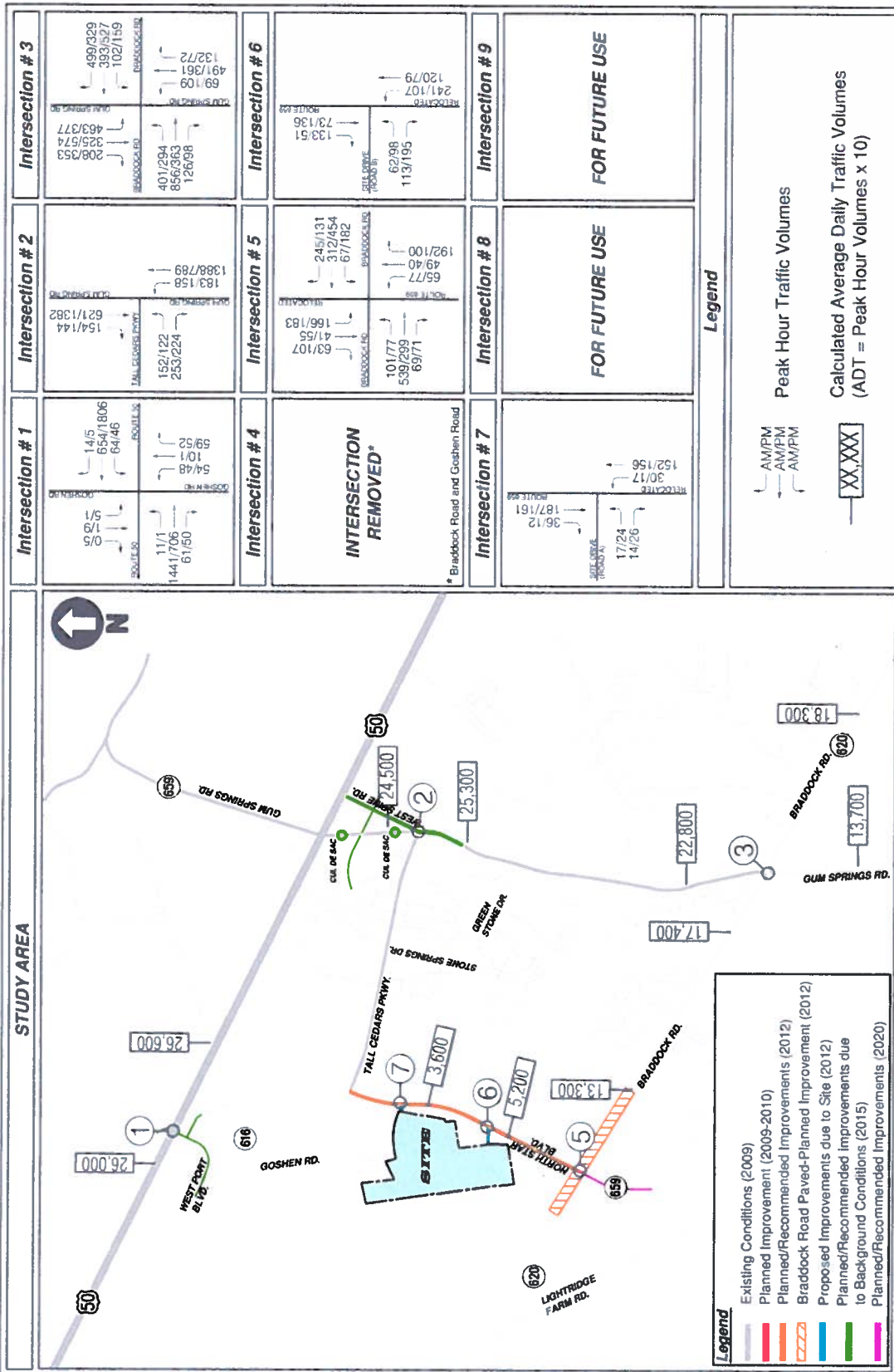
Table 10F: Future Conditions with Development (2015) Intersection Capacity Analysis, ES Peak Alternative 3 Board Adopted Service Plan  
Total Future Condition (2015)-ES Peak Hour-Board Adopted Service Plan

Intersection	Movement	AM PEAK HOUR						PM PEAK HOUR					
		Movement/Lane Group			Approach			Movement/Lane Group			Approach		
		Delay (sec / veh)	LOS		Delay (sec / veh)	LOS		Delay (sec / veh)	LOS		Delay (sec / veh)	LOS	
US Route 50 and Goshen Road (Signalized)	EB L	49.8	D		17.7	B		28.8	C		11.4	B	
	EB T	17.6	B					11.4	B				
	EB R	9.1	A					9.7	A				
	WB L	43.8	D		11.5	B		28.1	C		13.9	B	
	WB T	8.4	A					13.3	B				
	WB R	7.3	A					8.5	A				
	NB L/T/R	39.3	D		39.3	D		20.3	C		20.3	C	
	SB L/T/R	34.9	C		34.9	C		18.8	B		18.8	B	
	EB L	27.2	D		16.4	C		28.4	D		16.2	C	
	EB R	9.9	A					11.7	B				
Tall Cedars Parkway and Gum Spring Road (Unsignalized)	NB L/T	2.7	A					3.6	A				
	NB T	0.0	A					0.0	A				
	NB R	0.0	A					0.0	A				
	SB L	0.0	A					0.0	A				
	SB T	0.0	A					0.0	A				
	SB R	0.0	A					0.0	A				
	L	22.1	C					15.0	B				
	EB T	35.8	D		31.2	C		22.0	C		19.1	B	
	EB R	20.6	C					17.0	B				
	L	24.8	C					18.0	B				
Braddock Road and Gum Spring Road (Signalized)	WB T	27.0	C		22.0	C		30.3	C		24.4	C	
	WB R	15.5	B					16.4	B				
	NB L	27.8	C		35.9	D		26.4	C		30.0	C	
	NB T/R	36.7	D					30.6	C				
	L	23.7	C					20.8	C				
	SB T	21.9	C		22.1	C		26.9	C		23.4	C	
	SB R	17.7	B					17.5	B				
Braddock Road and Goshen Road	EB L/T	4.9	A					4.2	A				
	WB T	0.0	A		0.0	A		0.0	A				
	WB R	0.0	A					0.0	A				
	L	14.0	B		14.0	B		13.4	B				
	SB R												
	EB L	8.9	A		6.7	A		8.8	A		8.0	A	
	EB R	6.5	A					7.8	A				
	NB L	8.9	A		8.1	A		9.0	A		7.8	A	
	NB T	6.6	A					6.7	A				
	SB T	6.7	A		6.9	A		6.6	A				
Road A and North Start Boulevard (Unsignalized)	SB R	7.6	A					7.5	A		6.8	A	
	L	8.3	A					7.8	A				
	EB R	7.9	A		8.0	A		7.2	A		7.4	A	
	NB L	11.0	B					8.8	A				
	NB T	8.9	A		10.9	B		8.7	A		8.8	A	
	NB R	9.0	A					8.6	A				
	SB T	9.0	A		7.2	A		6.5	A		7.0	A	
	SB R	7.0	A										



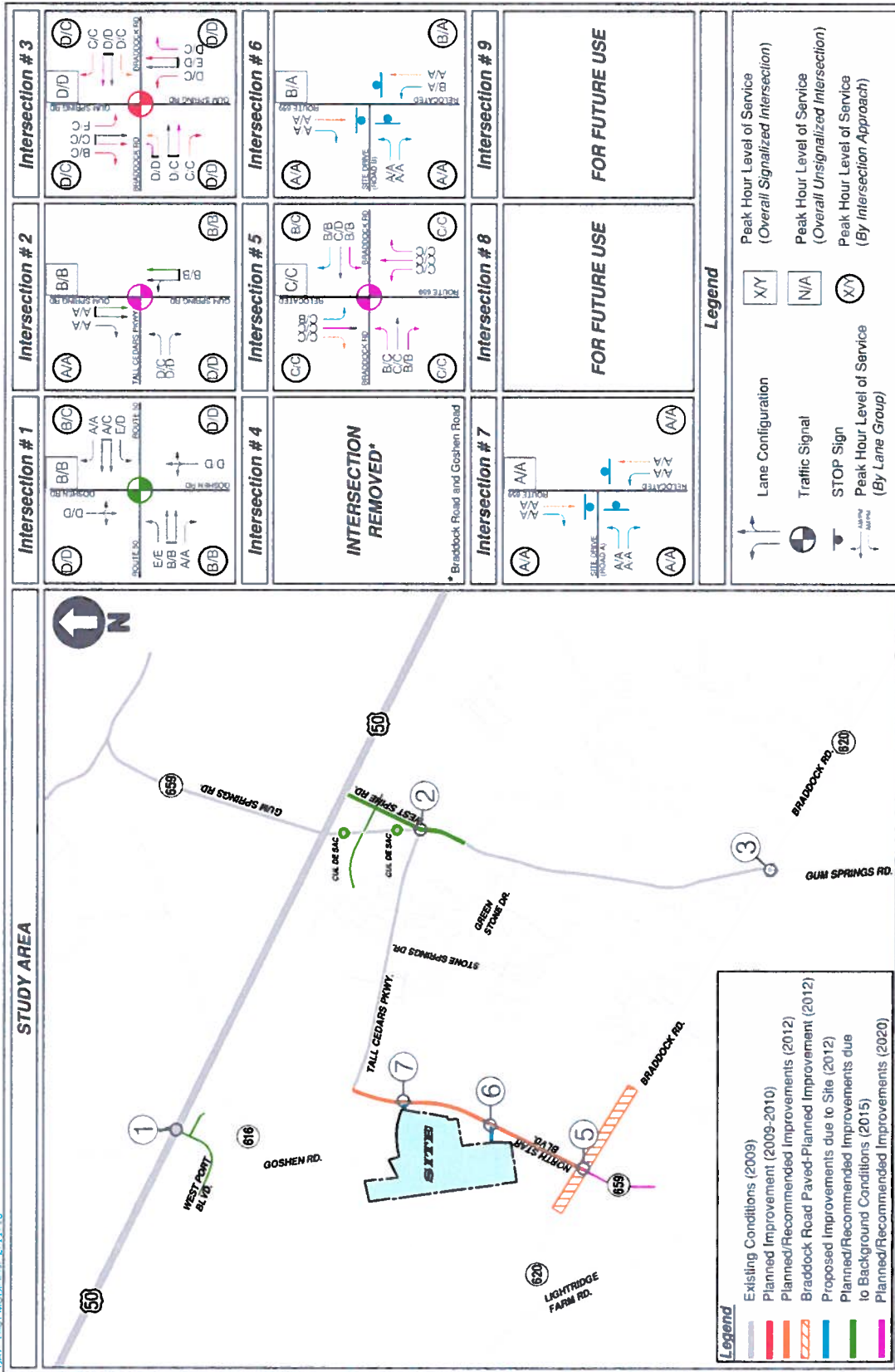
**Figure 60**  
Future with Development Recommended Improvements (2020)





**Figure 50**  
 Future with Development Traffic Volumes (2020)  
 High School Peak Hour (8:00 AM to 9:00 AM and 3:30 PM to 4:30 PM)  
 Alternative 3: Board Adopted Service Plan

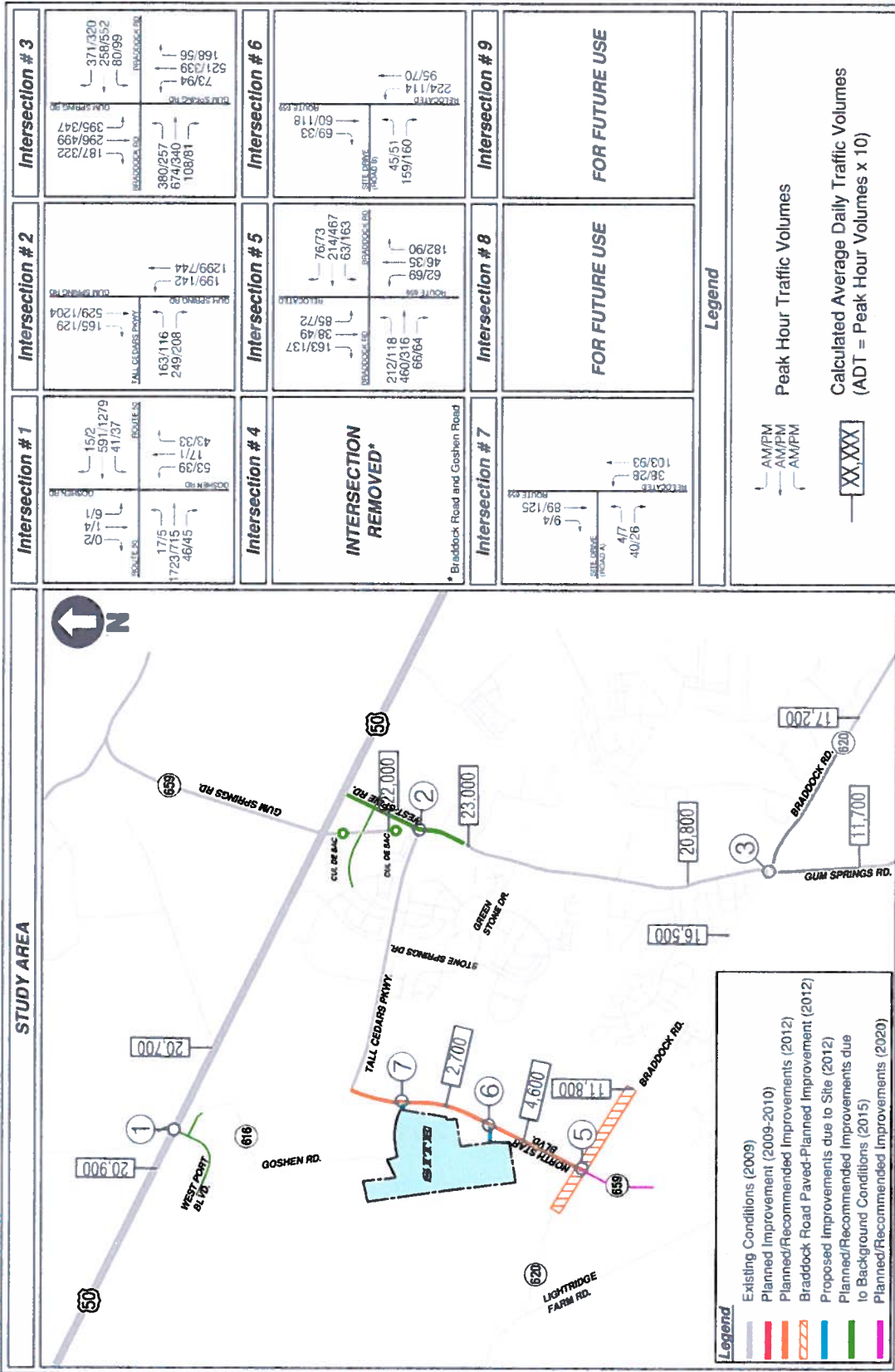




**Figure 56**  
 Future with Development Levels of Service (2020)  
 High School Peak Hour (8:00 AM to 9:00 AM and 3:30 PM to 4:30 PM)  
 Alternative 3: Board Adopted Service Plan

Table 11C: Future Conditions with Development (2020) Intersection Capacity Analysis, HS Peak Alternative 3 Board Adopted Service Plan

Total Future Condition (2020)-HS Peak Hour - Board Adopted Service Plan																			
Table 2-6: Future Conditions with Development (2020) Intersection Capacity Analysis - Board Adopted Service Plan																			
AM PEAK HOUR																			
Intersection	Movement	Movement/Lane Group		Approach		Intersection		Movement/Lane Group		Approach		Intersection							
		Delay (sec / veh)	LOS	Delay (sec / veh)	LOS	Delay (sec / veh)	LOS	Delay (sec / veh)	LOS	Delay (sec / veh)	LOS	Delay (sec / veh)	LOS						
US Route 50 and Goshen Road (Signalized)	EB	L	83.1	E	19.0	B	16.9	B	L	57.9	E	11.0	B						
		T	19.1	B					T	11.1	B								
		R	8.9	A					R	8.5	A								
	WB	L	58.0	E	12.6	B			L	51.9	D	21.6	C	19.8	B				
		T	8.3	A					T	20.9	C								
		R	6.4	A					R	5.8	A								
	NB	L/T/R	53.6	D	53.6	D			L/T/R	47.5	D	47.5	D						
		SB	L/T/R	45.3	D	45.3			D	L/T/R	43.1	D	43.1			D			
Tall Cedars Parkway and Gum Spring Road (Unsignalized)	EB	L	Err	F	Err	F	N/A	N/A	L	Err	F	Err	F			N/A	N/A		
		R	14.3	B					R	35.0	D								
	NB	L/T	5.1	A					L/T	12.2	B								
		T	0.0	A					T	0.0	A								
		R	0.0	A					R	0.0	A								
Overall Mitigation - Add a Signal	EB	L	43.9	D	39.6	D	18.3	B	L	30.8	C	35.2	D	15.5	B				
		R	37.0	D					R	37.5	D								
		L/T/T	19.3	B					L/T/T	19.2	B								
		SB	T	5.2					A	5.1	A					8.2	A		
Braddock Road and Gum Spring Road (Signalized)	EB	L	232.8	F	182.3	F	120.4	F	L	66.0	E	37.5	D	78.5	E				
		T	182.6	F					T	27.0	C								
		R	19.4	B					R	18.6	B								
	WB	L	64.7	E	27.6	C			L	20.4	C	42.8	D						
		T	29.7	C					T	61.5	E								
		R	18.4	B					R	23.5	C								
	NB	L	36.7	D	107.1	F			L	60.5	E	48.4	D						
		T/R	114.9	F					T/R	45.4	D								
		L	260.2	F					L	380.9	F								
	SB	T	30.9	C	136.3	F			T	45.7	D	137.1	F						
		R	25.3	C					R	25.3	C								
	Mitigations at Braddock Road and Gum Spring Road:																		
Add 2nd through lane and 2nd left turn lane	EB	L	49.3	D	45.5	D	46.2	D	L	44.0	D	36.6	D	33.0	C				
		T	46.9	D					T	34.0	C								
		R	24.3	C					R	24.1	C								
Add 2nd through lane	WB	L	53.4	D	38.5	D			L	26.0	C	33.4	C						
		T	45.4	D					T	43.5	D								
		R	30.0	C					R	20.8	C								
Add a separate right turn lane	NB	L	35.3	D	51.4	D			L	31.4	C	38.5	D						
		T	58.0	E					T	43.0	D								
		R	35.3	D					R	26.1	C								
	SB	L	86.3	F	51.2	D			L	31.8	C	28.4	C						
		T	25.1	C					T	31.5	C								
		R	13.7	B					R	19.7	B								
Braddock Road and Goshen Road		Intersection Closed							Intersection Closed										
Braddock Road and North Star Blvd. (Unsignalized)	EB	L	9.8	A					N/A	N/A	L	9.3	A					N/A	N/A
		T	0.0	A							T	0.0	A						
		R	0.0	A			R	0.0			A								
	WB	L	9.2	A			L	8.8			A								
		T	0.0	A			T	0.0			A								
		R	0.0	A			R	0.0			A								
	NB	L	210.8	F	69.8	F	L	857.5			F	323.9	F						
		T	31.8	C			T	30.5			D								
		R	0.0	A			R	0.0			A								
	SB	L	Err	F	Err	F	L	Err			F	Err	F						
		T	27.4	D			T	38.5			E								
		R	0.0	A			R	0.0			A								
Overall Mitigation - Add a Signal																			
Braddock Road and North Star Blvd. (Signalized)	EB	L	16.5	B	29.7	C	24.9	C	L	21.1	C	26.3	C	26.1	C				
		T	34.2	C					T	29.3	C								
		R	14.6	B					R	19.0	B								
	WB	L	16.3	B	16.9	B			L	17.2	B	27.5	C						
		T	21.1	C					T	36.2	D								
		R	11.2	B					R	11.3	B								
	NB	L	32.1	C	31.4	C			L	30.9	C	28.9	C						
		T	34.9	C					T	33.8	C								
		R	30.3	C					R	25.6	C								
	SB	L	22.1	C	23.4	C			L	19.7	B	21.1	C						
		T	27.5	C					T	25.7	C								
		R	23.8	C					R	21.3	C								
Road A and North Start Boulevard (Unsignalized)	EB	L	8.6	A	8.2	A	8.2	A	L	9.3	A	8.9	A	8.3	A				
		R	7.7	A					R	8.5	A								
	NB	L	9.3	A	8.2	A			L	9.1	A	8.2	A						
		T	8.0	A					T	8.1	A								
		R	8.4	A					R	8.2	A								
Road B and North Start Boulevard (Unsignalized)	EB	L	9.3	A	8.8	A	10.1	B	L	9.2	A	9.1	A	9.1	A				
		R	8.6	A					R	9.0	A								
	NB	L	12.9	B	11.7	B			L	9.7	A	9.2	A						
		T	9.1	A					T	8.5	A								
		R	8.4	A					R	9.8	A								
SB	T	7.9	A	8.1	A	T	7.2	A	9.1	A									

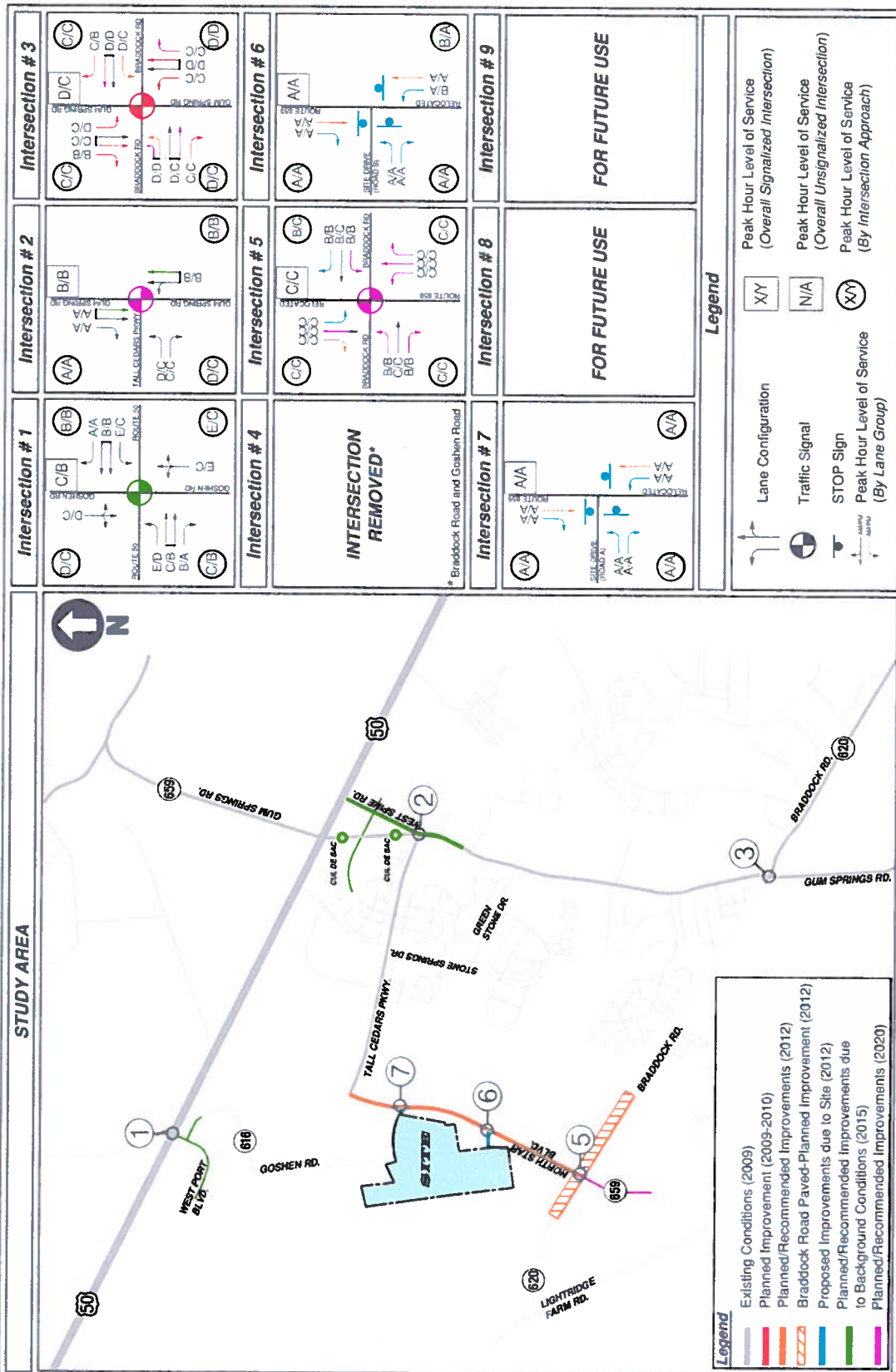


**Figure 53**  
Future with Development Traffic Volumes (2020)  
Elementary School Peak Hour (7:00 AM to 8:00 AM and 2:15 PM to 3:15 PM)  
Alternative 3: Board Adopted Service Plan



FILE PATH: P:\2110\013\1\CP5 Goshen HS7\CAD  
DATE: 12/11/2010

June 09, 2010



**Figure 59**  
Future with Development Levels of Service (2020)  
Elementary School Peak Hour (7:00 AM to 8:00 AM and 2:15 PM to 3:15 PM)  
Alternative 3: Board Adopted Service Plan

Table 11F: Future Conditions with Development (2020) Intersection Capacity Analysis, ES Peak Alternative 3 Board Adopted Service Plan

Total Future Condition (2020)-ES Peak Hour-Board Adopted Service Plan																
AM PEAK HOUR																
Intersection	Movement	Movement/Lane Group		Approach		Intersection		Movement/Lane Group		Approach		Intersection				
		Delay (sec / veh)	LOS	Delay (sec / veh)	LOS	Delay (sec / veh)	LOS	Delay (sec / veh)	LOS	Delay (sec / veh)	LOS	Delay (sec / veh)	LOS			
US Route 50 and Goshen Road (Signalized)	EB	L	78.4	E	30.2	C	27.9	C	L	39.6	D	11.9	B			
		T	30.3	C					T	11.8	B					
		R	10.1	B					R	8.9	A					
	WB	L	78.5	E	15.0	B			L	32.7	C	15.4	B			
		T	10.9	B					T	14.9	B					
		R	8.7	A					R	7.0	A					
	NB	L/T/R	62.9	E	62.9	E			L/T/R	27.9	C	27.9	C			
		SB	L/T/R	53.6	D	53.6			D	L/T/R	25.9	C	25.9	C		
	Tall Cedars Parkway and Gum Spring Road (Unsignalized)	EB	L	945.6	F	382.1			F	N/A	N/A	L	Err	F	Err	F
R			13.2	B	R	24.1	C									
NB		L/T	5.0	A	L/T	8.6	A									
		T	0.0	A	T	0.0	A									
SB		T	0.0	A	T	0.0	A									
		R	0.0	A	R	0.0	A									
			0.0	A	0.0	A										
Overall Mitigation - Add a Signal																
	EB	L	39.0	D	35.4	D	17.1	B	L	25.5	C	26.5	C			
		R	32.9	C					R	27.1	C					
	NB	L/T, T	17.5	B	17.5	B			L	13.8	B	13.8	B			
		T	5.5	A	T	8.1			A							
	SB	R	5.0	A	5.4	A			R	5.1	A	7.8	A			
Braddock Road and Gum Spring Road (Signalized)	EB	L	63.6	E	66.5	E	81.7	F	L	41.6	D	29.5	C			
		T	75.9	E					T	23.5	C					
		R	19.2	B					R	16.5	B					
	WB	L	38.0	D	22.1	C			L	10.3	B	43.9	D			
		T	25.9	C					T	61.2	E					
		R	16.0	B					R	21.7	C					
	NB	L	36.8	D	149.0	F			L	41.7	D	44.8	D			
		T/R	160.8	F					T/R	45.5	D					
		L	168.9	F					L	303.0	F					
	SB	T	30.6	C	91.6	F			T	43.2	D	115.5	F			
		R	25.2	C					R	25.6	C					
	Mitigations at Braddock Road and Gum Spring Road:															
	Add 2nd through lane and 2nd left turn lane	EB	L	44.4	D	39.6			D	37.3	D	L	41.3	D	33.5	C
T			39.3	D	T		30.5	C								
R			24.6	C	R		21.5	C								
Add 2nd through lane	WB	L	26.7	D	32.8	C	L	25.0	C			33.0	C			
		T	41.4	D			T	41.9	D							
		R	26.0	C			R	20.0	B							
Add a separate right turn lane	NB	L	31.8	C	45.9	D	L	30.1	C			37.4	D			
		T	52.4	D			T	41.2	D							
		R	32.0	C			R	27.1	C							
	SB	L	45.3	D	30.6	C	L	27.6	C			28.8	C			
		T	22.8	C			T	30.6	C							
		R	12.0	B			R	19.7	B							
Braddock Road and Goshen Road		Intersection Closed						Intersection Closed								
Braddock Road and North Star Blvd. (Unsignalized)	EB	L	8.7	A			N/A	N/A	L	9.3	A		N/A			
		T	0.0	A					T	0.0	A					
		R	0.0	A					R	0.0	A					
	WB	L	8.9	A					L	8.7	A		N/A			
		T	0.0	A					T	0.0	A					
		R	0.0	A					R	0.0	A					
	NB	L	391.3	F	103.7	F			L	Err	F	415.4	F			
		T	25.5	D					T	29.9	D					
		R	0.0	A					R	0.0	A					
	SB	L	942.7	F	294.3	F			L	626.0	F	201.0	F			
		T	20.0	C					T	36.8	E					
		R	0.0	A					R	0.0	A					
Overall Mitigation - Add a Signal																
Braddock Road and North Star Blvd. (Signalized)	EB	L	15.9	B	22.1	C	21.8	C	L	17.0	B	20.9	C			
		T	28.3	C					T	23.8	C					
		R	13.2	B					R	15.0	B					
	WB	L	14.5	B	15.8	B			L	12.7	B	22.3	C			
		T	17.8	B					T	27.4	C					
		R	11.3	B					R	11.6	B					
	NB	L	27.3	C	26.7	C			L	27.6	C	25.8	C			
		T	30.3	C					T	30.7	C					
		R	25.6	C					R	22.5	C					
	SB	L	21.9	C	23.1	C			L	23.3	C	24.3	C			
		T	26.7	C					T	28.5	C					
		R	22.9	C					R	23.4	C					
Road A and North Start Boulevard (Unsignalized)	EB	L	9.2	A	7.0	A	7.5	A	L	9.2	A	8.5	A			
		R	6.8	A					R	8.2	A					
	NB	L	8.9	A	7.8	A			L	7.8	A	7.4	A			
		T	7.4	A					T	7.3	A					
	SB	T	7.3	A	7.3	A			L	7.8	A	7.6	A			
		R	7.6	A					R	7.6	A					
Road B and North Start Boulevard (Unsignalized)	EB	L	8.6	A	8.5	A	9.3	A	L	8.4	A	8.1	A			
		R	8.5	A					R	8.0	A					
	NB	L	11.3	B	10.5	B			L	9.1	A	8.6	A			
		T	8.7	A					T	8.0	A					
	SB	T	8.2	A	7.7	A			L	9.0	A	8.5	A			
		R	7.2	A					R	8.7	A					



**phillips, george**

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**From:** Zeller, James C., P.E. [James.Zeller@VDOT.Virginia.gov]  
**Sent:** Monday, March 29, 2010 10:28 AM  
**To:** phillips, george  
**Cc:** Hakim, Gaby Y.; Salous, Imad A., P.E.; Bigdeli, Farid, P.E.; Nies, Nick M.  
**Subject:** Proposed Abandonment of a Portion of Route 616 Goshen Road

George,

Loudoun County Public Schools has requested the abandonment of a portion of Route 616 Goshen Road beginning at its intersection with Route 620 Braddock Road and extending north approximately 0.85 mi. The purpose of the abandonment is to facilitate the construction of an elementary school and a high school. VDOT staff at the Leesburg Residency has reviewed the request and offers the following comments:

1. The abandonment relies on the construction of a portion of Relocated Route 659. Please note that before the Goshen Road right of way can be abandoned, the necessary portion of Relocated Route 659 must be accepted into the state system for maintenance.
2. The portion of Relocated Route 659 affected by this request is part of the adopted Location of the Tri-County Parkway (VDOT Project R000-96A-102 P101, UPC 52405). Design and construction by third parties of Relocated Route 659 will need to be coordinated with the major design elements of the Tri-County Parkway Location Study. The parties responsible for Relocated Route 659 should contact the Tri-County Parkway project manager to exchange design parameters. Here is the contact information of VDOT's project manager:

Mr. Nick M. Nies, Environmental Specialist II

Virginia Department of Transportation

1201 East Broad Street

Richmond, Virginia 23219

804-786-1092

[nicholas.nies@vdot.virginia.gov](mailto:nicholas.nies@vdot.virginia.gov)

Please do not hesitate to call or email me if you have any questions.

James C. Zeller PE

Virginia Department of Transportation

41 Lawson Road, SE

Leesburg, Virginia 20175-4460

703-737-2014 o

703-771-2528 f

571-722-6381 c

**LOUDOUN COUNTY**  
**OFFICE OF TRANSPORTATION SERVICES**  
**MEMORANDUM**

**DATE:** March 23, 2010

**TO:** George Phillips, Senior Transportation Planner

**FROM:** Charles D. Acker, Transportation Operations Engineering *cd*

**SUBJECT:** Abandonment of a portion of Route 616 (Goshen Road)

The two entrances proposed for HS-7 and ES site both depend on the same section of a major roadway (Relocated Route 659) for access at intersections with residential subdivisions. How will the schools be accessed if the major roadway is blocked by an emergency incident? There is no emergency access shown. The ultimate condition of the major roadway may necessitate installation of traffic control (traffic signal) at one or both entrances in the future. In addition it's very possible that the residential areas could experience cut thru and parking issues associated with the high school, especially if the parking fee charged continues to rise. Parking issues can occur both during the school hours and at night for athletic events and PTA/Open House meeting.

Recommendations: Keep the northern section of Goshen Road in place as an Emergency access road with either minimal type paving (rural rustic type) or hardened grass access from the end of paved ROW. This should not be too difficult because the two water towers nearby will need access to a public road.

LCPS should proffer contributions to the County to perform warrant studies at both entrances on Relocated Route 659 and to fund the complete design and installation of signals when warranted. Both proffers should remain valid for at least 10 years after the last of the two schools is opened.

LCPS to work with the developers of Stone Ridge West and CD Smith to design into their construction plans physical traffic calming measures for each of the developments. The additional cost of these measures above the normal developer infrastructure cost should be funded by LCPS.

I realize that the two proffer commitments should be in the SPEX/ZMAP but they relate to traffic issues and should be noted as early as possible.



**COUNTY OF LOUDOUN  
PARKS, RECREATION AND COMMUNITY SERVICES  
REFERRAL MEMORANDUM**

**To:** George Philips, Senior Transportation Planner,  
Office of Transportation Services (OTS) (MSC #69)

**From:** *BGF* Brian G. Fuller, Park Planner, Facilities Planning and Development  
(MSC #78)

**Through:** *AN* Mark A. Novak, Chief Park Planner, Facilities Planning and Development

**CC:** Diane Ryburn, Director  
Steve Torpy, Assistant Director  
Su Webb, PROS Board, Chairman, Catoctin District  
Jean Ault, PROS Board, Dulles District  
Robert C. Wright, PROS Board, Open Space Member  
James E. O'Connor, PROS Board, Open Space Member

**Date:** April 6, 2010



**Subject:** Proposed Abandonment of a Portion of Route 616 (Goshen Road)

**Election District:** Dulles      **Sub Planning Area:** Dulles

**MCPI #:** Multiple

The Applicant, Loudoun County Public Schools (LCPS), has petitioned the Board of Supervisors to abandon a 4,505 foot long portion of Goshen Road, from Braddock Road northward. LCPS is proposing to construct a high school and an elementary school on a 97+ acre assemblage of property straddling Goshen Road, to the south of future Tall Cedars Parkway and to the west of future Relocated Route 659. LCPS is proposing to construct a portion of Relocated Route 659 and a connector road (Road A) back to the northern portion of Goshen Road to serve the high school. The high school is anticipated to be opened in the Fall of 2012.

It appears that the proposed abandonment will impact two proffered PRCS park sites. On Sheet 2 of the Abandonment Exhibit Plat, MCPI # 248-17-6333 (Parcel C, Stratshire Crossing, Phase 1) is to be dedicated to Loudoun County per amended Proffer IV.B.3 of ZMAP 2003-0012. The active recreation construction and parcel conveyance shall be completed prior to the issuance of the 100<sup>th</sup> residential zoning permit for the Property. Winchester Homes is currently coordinating with PRCS Staff to commence site construction and parcel conveyance this summer (2010). PRCS requests more clarification on whether the proposed abandonment is scheduled to be completed prior to the park conveyance to the County, and whether the current street dedication and prescriptive right-of-way area will be conveyed to the County to be included within the park site as well.

Furthermore, on Sheets 3, 4 and 5 of the Abandonment Exhibit Plat, MCPI # 248-29-4046, 248-30-5519, 248-39-4888 (Two Greens/Kirkvest LLC, C.D. Smith Property) is to be dedicated to Loudoun County per Proffer V.B.3 of ZMAP 2002-0003. The active and passive recreation uses identified as Community Park shall be completed and conveyed no later than the issuance of the 300<sup>th</sup> residential zoning permit for the Property. PRCS reviewed the first submission of the Site Plan (STPL 2008-0047), but that application has since gone inactive. PRCS requests more clarification on whether the current prescriptive right-of-way area will be included in the future conveyance from Two Greens/Kirkvest LLC to the County as part of the park site. PRCS also requests further information on the impacts on the park site of proposed "Road B" on Sheet 4.

If you have any questions or concerns regarding these comments, please do not hesitate to contact me personally via phone at 571-258-3251, or via e-mail at [brian.fuller@loudoun.gov](mailto:brian.fuller@loudoun.gov). You may also contact Mark Novak via phone at 703-737-8992, or via e-mail at [mark.novak@loudoun.gov](mailto:mark.novak@loudoun.gov). I look forward to attending any meetings or work sessions to offer PRCS support, or to be notified of any further information regarding this project.

**phillips, george**

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**From:** Armstrong, Van  
**Sent:** Wednesday, March 24, 2010 11:12 AM  
**To:** phillips, george  
**Subject:** Road abandonments

George – I have reviewed the three road abandonment referrals all dated March 16, 2010 regarding Ryan Road (Route 772) and Goshen Road (Route 616). I see know immediate comments necessary from the Planning Department and acknowledge the status of each of these roads with respect to their planned improvements and/or replacement.  
Thanks, Van

Van Armstrong, Program Manager  
Land Use Review  
Loudoun County Planning Department  
703-777-0653



**Loudoun County Public Schools**  
**Proposed Abandonment of**  
**A Portion of Route 616 (Goshen Road)**  
**Response to Referral Comments**  
**June 8, 2010**

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**Parks and Recreation**  
**Comments dated April 6, 2010**

**Comment 1: Provide more clarification on whether the proposed abandonment is scheduled to be completed prior to the park conveyance to the County**

**Response:** The proposed abandonment of Goshen Road requires that Relocated Route 659 be constructed and accepted into the state system for maintenance. The timeline for the completion of the abandonment process is not known at this time. Likewise, the C.D. Smith Park is proffered to be dedicated prior to the issuance of the 300<sup>th</sup> residential zoning permit. Development of the C.D. Smith project has not been initiated.

**Comment 2: Provide clarification on whether the current prescriptive right-of-way area will be included in the future conveyance from Two Greens/Kirkvest LLC to the County as part of the park site.**

**Response:** The abandonment of Goshen Road would result in .19853 acres reverting to the C.D. Smith parcel located on the west side of Relocated Route 659, the proffered park site. It would be logical for that land area to convey with the park.

**Comment 3: Provide further information on the impacts on the park site of proposed "Road B" on Sheet 4.**

**Response:** The proposed Road B realigns the previously planned road to cross the park and results in a more usable area to the south of Road B. Utilizing the direction of Parks and Recreation, alternative layouts were examined. Parks and Recreation staff indicated a preference for Alternative 2 which moves the play meadow to the south side of the road and incorporates additional parking that will serve users of the play meadow. Alternative 2 also incorporated a micro play field on the north side of Road B. Parking is maintained on the north side of the road and will include gates to allow the park to be closed. In addition, with the construction of Road B public water will be brought to the site and with the construction of Relocated Route 659 a sleeve is being placed under the roadway to accommodate the future extension of public sewer at such time as public sewer is available to the east at the C.D. Smith property. Overall the alternative design of the park better utilizes the land area available. The proximity of the park and schools will be mutually beneficial.

**Office of Transportation Services**  
**Comments dated March 23, 2010**

**Comment 1: Keep the northern section of Goshen Road in place as an emergency access road with either minimal type paving (rural rustic type) or hardened grass access from the end of paved right-of-way.**

**Response:** LCPS is willing to maintain the northern section of Goshen Road as an emergency access road, as recommended.

**Comment 2: LCPS should proffer contributions to the County to perform warrant studies at both entrances on Relocated Route 659 and to fund the complete design and installation of signals when warranted. Both proffers should remain valid for at least 10 years after the last of the two schools is opened.**

**Response:** LCPS is willing to provide for future signal warrant analysis and fund future signals if warranted. This should be addressed as a part of the Special Exception.

**Comment 3: LCPS to work with the developers of Stone Ridge West and CD Smith to design into their construction plans physical traffic calming measures for each of the developments. The additional cost of these measures above the normal developer infrastructure cost should be funded by LCPS.**

**Response:** The design of the road network for Stone Ridge West and CD Smith will appropriately be the responsible of the respective developers of those communities. LCPS has worked with representatives of Stone Ridge and C.D. Smith as well as Braddock Crossing (aka Stratshire Crossing) and Westport. The proposed schools will be an asset to the surrounding communities.

**VDOT**  
**Comments dated March 29, 2010**

**Comment 1: The abandonment relies on the construction of a portion of Relocated Route 659. Please note that before the Goshen Road right-of-way can be abandoned, the necessary portion of Relocated Route 659 must be accepted into the state system for maintenance.**

**Response:** Acknowledged

**Comment 2: The portion of Relocated Route 659 affected by this request is part of the adopted location of the Tri-County Parkway (VDOT Project R000-96A-101, UPC 52405). Design and construction by third parties of Relocated Route 659 will need to be coordinated with the major design elements of the Tri-County Parkway Location Study.**

Loudoun County Public Schools  
Proposed Abandonment of a Portion of Route 616 (Goshen Road)  
Response to Referral Comments  
June 8, 2010

**The parties responsible for Relocated Route 659 should contact the Tri-County Parkway project manager to exchange design parameters.**

**Response:** Urban Engineering, consultant for LCPS to prepare the design plans for Relocated Route 659, has contacted Mr. Nick Nies at VDOT and provided a layout of the plan depicting the alignment. We anticipate a response in the near future. The applicant will continue to coordinate with VDOT.

**Planning Department**  
**Comments dated March 24, 2010**

No Comments

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